

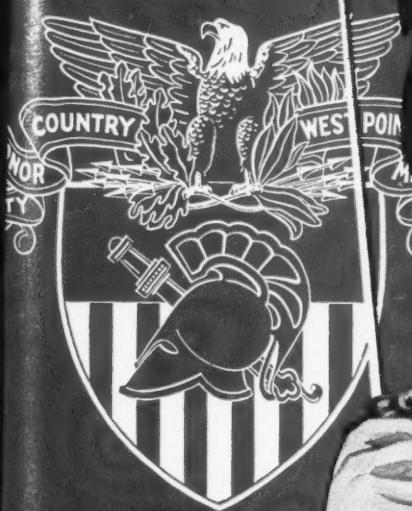
GENERAL INFORMATION

THE OFFICIAL

**ARMY
INFORMATION
DIGEST**

U.S. ARMY MAGAZINE

JUNE 1959



ARMY INFORMATION DIGEST



THE OFFICIAL MAGAZINE OF THE DEPARTMENT OF THE ARMY

The mission of ARMY INFORMATION DIGEST is to keep personnel of the Army aware of trends and developments of professional concern. The Digest is published under supervision of the Army Chief of Information to provide timely and authoritative information on policies, plans, operations, and technical developments of the Department of the Army to the Active Army, Army National Guard, and Army Reserve. It also serves as a vehicle for timely expression of the views of the Secretary of the Army and the Chief of Staff and assists in the achievement of information objectives of the Army.

Manuscripts on subjects of general interest to Army personnel are invited. Direct communication is authorized to: The Editor, ARMY INFORMATION DIGEST, Cameron Station, Alexandria, Va.

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COVER

DUTY, HONOR, COUNTRY—credo of the U. S. Military Academy—is personified by the 22,000 West Pointers who, over 157 years, have maintained the Nation's prowess in war and its progress in peace. Cadet discipline, study and recreation is the theme of "June Week Reflections."

COMMAND LINE

Army Views On Vital Issues

ON MAN AND MACHINES IN WAR

"Man is and will remain the essential element in war. Men, not machines, win or lose the battle. Machines cannot wage war; they can only increase the effectiveness of man. The importance of the individual increases with the complexity of the weapons he must employ. The importance of the man will increase until we reach the stage of having weapons which can think and improvise; which can meet reverses with resolution; and which can match hardship and danger with devotion and courage, and carry on to final victory. There is no such weapon on the horizon."

General Lyman L. Lemnitzer,
at Association of Military Colleges and Schools,
Washington, D. C., 10 March 1959.

ON THE PRICE OF FREEDOM

"It has been well said that if a nation values anything more than freedom, it will lose its freedom; and if it is comfort or money which it values more it will lose that, too.

"We shall deserve to survive and prosper only to the extent that we are willing to pay the price of freedom in the golden coin of courage, self-discipline, devotion, and steadfast adherence to the great tenets of our American faith."

Secretary of the Army Wilber M. Brucker,
before the Rainbow Division Veterans Association,
Detroit, Michigan, 22 February 1959.

ON LEVELS OF WARFARE

"We must be prepared to wage war at two levels—in situations short of general war, and finally in general war itself. By a situation short of general war, we mean one in which the USSR is not directly engaged and in which the stake is less than our survival. General war is usually taken to mean an all-out struggle between the Free World and the Soviet bloc in which the stake is the national existence of the contending sides."

General Maxwell D. Taylor,
before the World Affairs Council of Northern California,
San Francisco, California, 26 February 1959.

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U. S. ARMY MAGAZINE

JUNE 1959
VOLUME 14 NUMBER 6



Reverie at reveille—

JUNE WEEK REFLECTIONS:

From Cadet Gray To Army Green

WHAT makes a leader? The United States Military Academy at West Point, New York, has the answer. Militarily terse, the premise upon which West Point training is based consists of seven words—"Leaders are not born, they are developed."

In following this concept, the Military Academy has adopted a role unique among institutions of higher learning. In admitting a man as a cadet, the Academy accepts full responsibility for the development of the whole man, mentally, morally and physically, as well as militarily.

YOUTHS of widely scattered origins graduate with a kindred sense of duty and patriotism, each bearing the stamp of character and leadership—the hallmark of West Point. Equality of opportunity, pursuit of a common goal and devotion to ideals make this desired result possible.

Young men of the Nation do not assume superhuman attributes as

they don the cadet gray. Subject to strict discipline, the men who will give orders tomorrow must learn to take orders today.

CADETS have but one goal, that of preparing themselves for a lifelong career of service to the Nation. Established rules governing this period of preparation do not demand solemn, fanatic dedication. The time-tested formulae for developing embryonic leadership have many facets and phases.

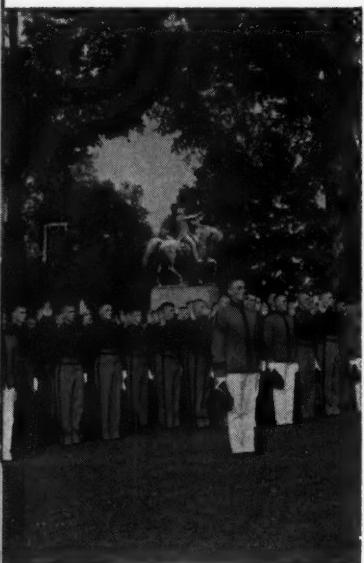
The end product of the training and education received at West Point is indelibly recorded on the pages of American history. In its more than a century and a half of existence, the United States Military Academy has graduated more than 22,000 cadets—men who have taken their place as leaders of the Nation in every field of endeavor.

In the following pictorial feature, a new facet is presented—four years at West Point as seen through the eyes of a graduating cadet. The impressions, highlights, and comments reflect the tenor of a series of informal interviews with cadets at the Military Academy.

Material in this section was compiled by SFC Thomas F. Forster of the Information Office, United States Military Academy.



Four years to go seemed an eternity as I got my first glimpse of West Point from the bus but sitting here today awaiting graduation ceremonies, it was only yesterday that we took the oath of allegiance making us members of the Corps.



There was always inspiration in the Cadet Chapel services. Soon I was admiring those Yearling (sophomore) stripes, while summer training passed all too swiftly.



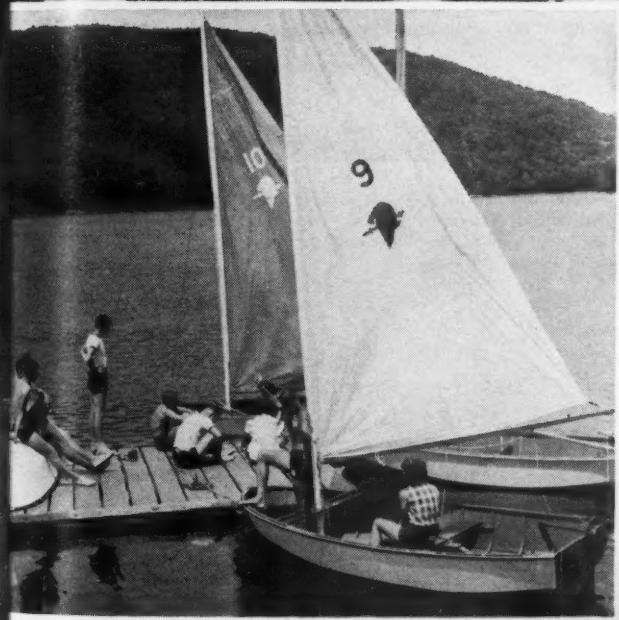


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Keeping spic and span soon became second nature; getting suited for formal parades took two men; and how I thrived on that food.





Upperclass status brought a jump into social whirl at Cullum Hall, scene of long-remembered "hops." There were, too, sunny interludes of swimming and sailing at nearby Camp Buckner.

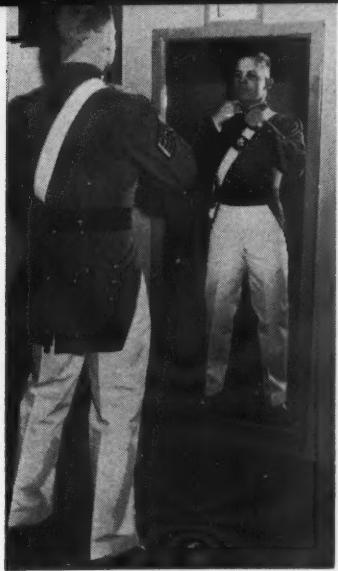


THE DUTIES OF THE STUDENT
RESPONSIBILITY OF STUDENTS
• Be Honest
• Work Hard
• Be Responsible and Set Good Examples
• Be Informed - To Be Informed Is A Sense Of Responsibility Being Educated
• Make Sure That The Team Is Organized, Supervised And Coordinated
• Make Your Best Effort, Show Out Your Team Spirit
• Make Your Team Work
• Make Your Team Win

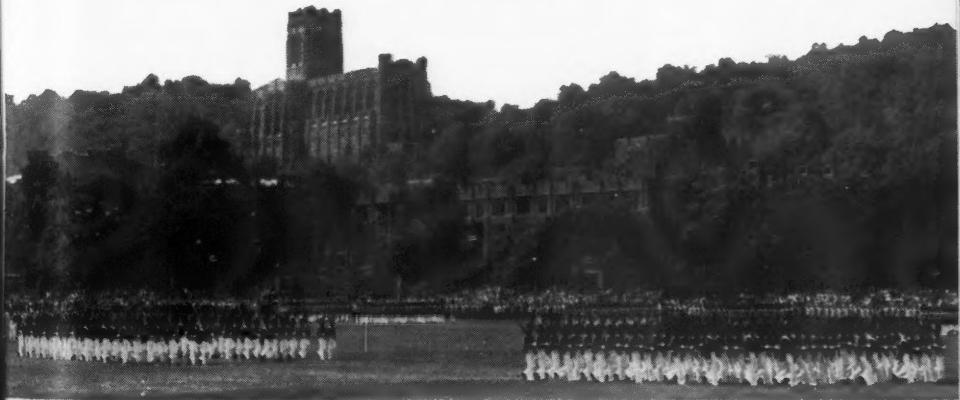


Daily classroom work of recitations, experiments and tests occupied a large part of the waking day and many hours of the night as well during the swift passage of those four years that marked an era in my life.



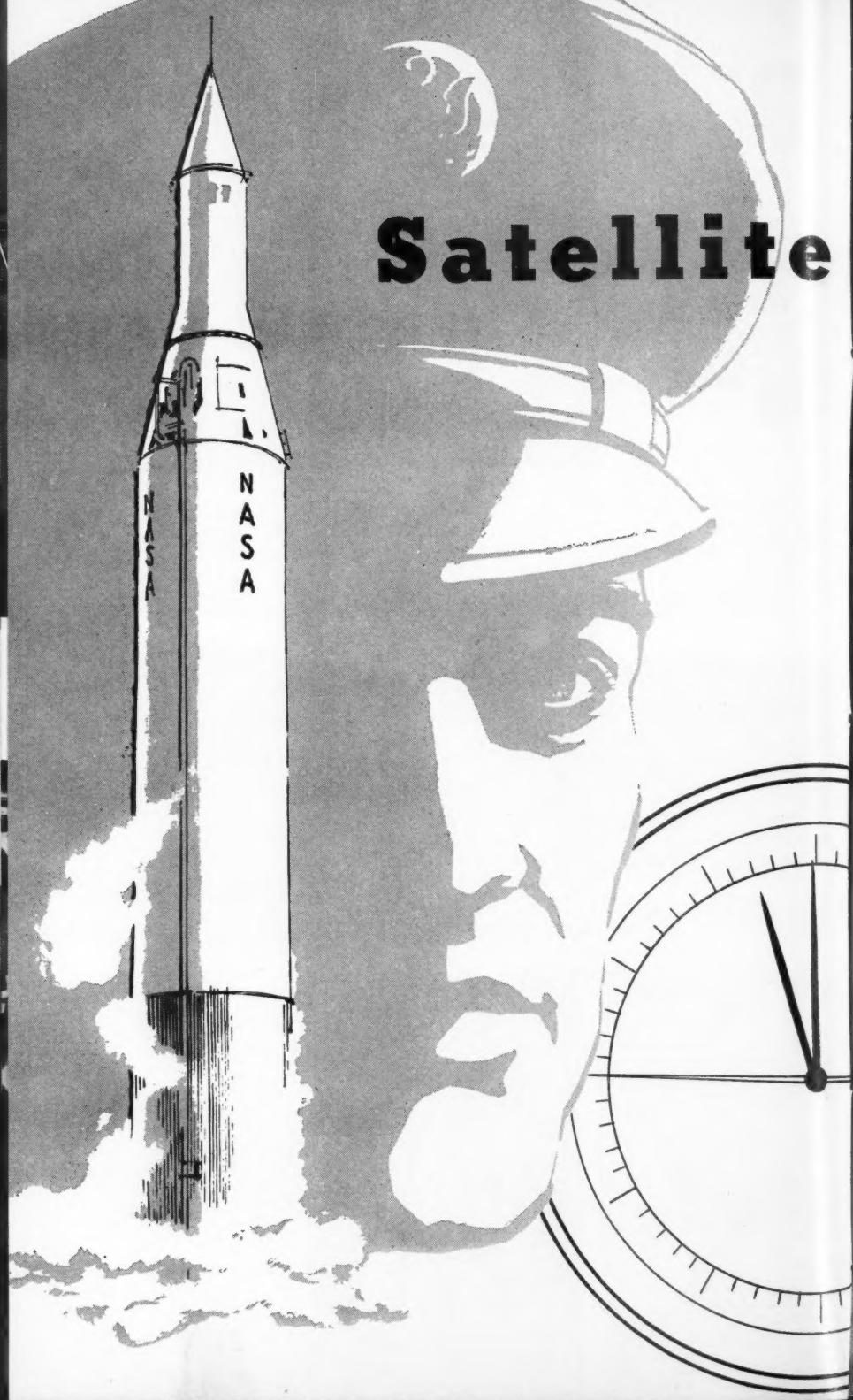


Two proud stripes as a "Cow" (junior) turned into three as a "Firstie" (senior) and would be replaced by the gold bar of a second lieutenant after graduation; meanwhile I paraded up to the day before Commencement exercises.



Now it's time for farewell — a last look around, then it's shoulders back and step out into a new life.

Satellite



Made and launched in USA . . .

e to the Sun

Major General J. B. Medaris

SUCCESS of the Nation's deep space probe, conducted for the National Aeronautics and Space Administration (NASA), was due to the superb teamwork of the technical services, elements of the U. S. Army Ordnance Missile Command and the Jet Propulsion Laboratory of NASA.

Major contributions were made by Corps of Engineers, Signal Corps and Transportation Corps, in their specialized fields, in support of a project for which Ordnance Corps had primary responsibility.

The Juno II project was one of the proposals originally submitted as a national space program by the Army in December 1957 and approved by the Advanced Research Projects Agency of the Department of Defense in late March 1958. Control of the undertaking passed to NASA in October 1958.

The first Juno II launched the Pioneer III space probe 6 December 1958. It penetrated approximately 65,000 miles into space, to supply valuable data, but a below-par velocity caused the probe to

return to the Earth's atmosphere.

The second Juno II was launched 3 March 1959. It achieved a velocity in excess of the 24,560 miles per hour required to escape Earth's gravitational force, shot by the Moon at a distance of about 36,000 miles from that body and sped on to become the first made-in-the-USA satellite of the Sun (See "Pioneer IV in Solar Orbit," May 1959 DIGEST).

THESE launchings produced some noteworthy findings. Among other things, they—

- Demonstrated capabilities of the Jupiter IRBM adapted to space missions to inject useful payloads into free flight at escape velocity or to inject earth satellites into orbit.

- Reduced the transfer time from Earth to deep space by a high velocity trajectory made possible by maximum performance of a combination of liquid and solid fuel propulsion systems.

- Provided more accurate measurement of the boundaries and



Launch results of space probe are studied by Gen. Lemnitzer, then Acting Chief of Staff, Maj. Gen. Storke, Chief of Information, and Dr. von Braun, Army missile expert.

depth of the cosmic radiation belt first detected by the Explorer earth satellites launched by the Army in 1958.

- Demonstrated tracking and communications systems capable of reaching out more than 400,000 miles in space.
- Applied Jupiter inertial guidance system to spatial projects.

THE Army Ordnance Missile Command (AOMC), activated 31 March 1958, served as executive agent for the NASA project. Tasks were divided according to their

unique capabilities between the Army Ballistic Missile Agency of AOMC and the Jet Propulsion Laboratory, NASA.

Brigadier General J. A. Barclay, commanding ABMA, and his world-famous team of long-range rocket developers headed by Dr. Wernher von Braun, modified the Jupiter for the historic flights. Transition of the IRBM weapons system from the development phase to production in the Michigan Ordnance Missile Plant had proceeded so smoothly that some development type missiles were available for other uses.

The Jet Propulsion Laboratory was responsible for preparing three high-speed upper stages and the probe itself—a conical package containing a radio transmitter, a shutter trigger experiment, and a cosmic radiation measuring device prepared by the State University of Iowa. Batteries powering the instrumentation were designed to operate continuously for about 85 hours after launch.



MAJOR GENERAL J. B. MEDARIS

Commanding General,
U. S. Army Ordnance Missile Command,
Redstone Arsenal, Alabama



Tense faces show concern as first reports of flight of Juno II come into Cape Canaveral blockhouse. Pointing is Dr. Kurt Debus as Dr. von Braun, Dr. Jenke, Mr. Froelich, Dr. Sendler and Gen. Barclay study figures.

JPL also operated the giant tracking installation at Goldstone Lake, Camp Irwin, California, which was built by the Corps of Engineers. The dish-shaped antenna, 85 feet in diameter, can record signals at distances up to 400,000 miles. By 1962 when its potential has been fully developed, this range will increase a thousand-fold.

The Signal Corps relocated and modified equipment in other ground tracking stations previously used in satellite experiments. This enabled the stations to keep track on the movements of both Pioneers from the time Juno II roared away from the Atlantic Missile Range launching pad until their voices were lost.

During the powered phase of flight, tracking was accomplished

by stations at Aberdeen Proving Ground, Maryland, Fort Stewart, Georgia, Cape Canaveral and Miami, Florida, Huntsville, Alabama, and Mayaguez, Puerto Rico. Specialized tracking programs were operative at the University of Illinois and Schenectady, New York.

Measuring 76 feet overall, the Juno II configuration consisted mainly of a modified Jupiter whose fuel tanks were lengthened to obtain longer burning time. The ABMA-developed inertial guidance system was installed in the instrument compartment atop the first stage. When the vehicle reached a pre-determined altitude and velocity—4,852 meters per second and about 57 miles—explosive bolts released springs which pushed the forward section ahead of the spent first stage. This fell away.

The vehicle coasted upward 59.5 seconds, then the high-speed stages fired in quick succession, boosting the velocity of the probe up to 10,659 meters per second at injection—that is, the point at which powered flight ends and "free" flight begins.

ABMA and JPL worked closely for weeks to prepare and refine the flight program. Many different

trajectories were plotted, several for each day in the December and March periods when conditions were most favorable for the experiment. The objective was to time the firing so that the probe would pass the Moon when the latter was over the Goldstone Lake station.

Recorded on magnetic tape, the flight program was fed into the guidance system prior to launch. Gyroscopes controlled the rocket

*In testimony before the Congressional Committee on Science and Astronautics on 9 February 1959,
Major General Dwight E. Beach, Director of Air Defense and Special Weapons,
Office of the Deputy Chief of Staff for Military Operations,
outlined some significant*

ARMY "FIRSTS" IN MISSILERY

1. First U. S. ballistic missile firing, May 1947: On 22 May 1947, the first full-scale flight test of a Corporal missile was entirely successful. The Corporal was fired by a team from the Jet Propulsion Laboratories, under contract to the Army, with participation by the First Guided Missile Battalion, Fort Bliss, Texas and U. S. Army Ordnance personnel of White Sands Missile Range, New Mexico. Fired at White Sands, the Corporal responded accurately to guidance commands and reached a range of 63 miles.

2. First penetration of outer space, February 1949: On 24 February 1949, a two-stage missile consisting of a German V-2 with a WAC Corporal as the second stage, was fired by the team of scientists under Dr. Von Braun at White Sands Missile Range, New Mexico, as part of the Army missile

program. Army personnel of the First Guided Missile Group at Fort Bliss and U. S. Army Ordnance personnel of the White Sands Missile Range participated in the firing of this missile, which achieved an altitude of 250 miles, a world record at that time.

3. First successful intercept of aircraft by guided missile, November 1951: The Army's R&D contractor (Western Electric) accomplished this on 27 November 1951 at White Sands Proving Ground with the first Nike missile fired at an aerial target. The missile detonated about 25 feet from the target, which was flying at about 15 miles range, 33,000 feet altitude and at a speed of 300 miles per hour.

4. First operational air defense GM unit, December 1953: In December 1953, the U. S. Army Air Defense Command (then called the Army Anti-

up to first stage cutoff by means of pitch, yaw and roll systems. After separation of the booster, these gyroscopes provided signals to the control system which utilized high-pressure air expelled through nozzles in the tail of the instrument compartment. In this manner the upper stage assembly and payload were correctly aligned with reference to the Earth's surface and the target in space.

ABMA technicians built a protective metallic shroud fitted over the upper stages and probe. This protected the solid propellant rockets and probe instrumentation from temperature extremes — as high as 500 degrees Fahrenheit — which were encountered as the vehicle traveled through the sensible atmosphere at velocities in the hypersonic range.

A small lateral "kick" rocket was

Aircraft Command) placed the first operational surface-to-air missile system on-site in the continental U. S. air defenses. This unit, a Nike Ajax battalion, was deployed in the Washington-Baltimore defenses.

5. *First U. S. operational ballistic missile unit, November 1954:* In November 1954 the Army's 259th Field Artillery Missile Battalion (Corporal) completed training at Fort Bliss, Texas, to become the first operational U. S. ballistic missile unit. The battalion was deployed to Europe in February 1955 to provide guided missile support for units in the U. S. Seventh Army.

6. *First Free World successful IRBM firing, May 1957:* On 31 May 1957, a full-scale Jupiter missile fired at the Atlantic Missile Range, Cape Canaveral, Florida, was the first successful IRBM of the free world. The firing was conducted by the Army ballistic missile team from the Army Ballistic Missile Agency and the Jet Propulsion Laboratories.

7. *First Free World solution of reentry problem, August 1957:* On 8 August 1957, a Jupiter-C ballistic missile, fired at the Atlantic Missile Range, Cape Canaveral, Florida, confirmed the first Free World solution to the

problem of missile nose cone reentry into the atmosphere. Firing was jointly conducted by personnel of the Army Ballistic Missile Agency and the Jet Propulsion Laboratories, both agencies of Army Ordnance Corps.

8. *First Free World satellite in orbit, January 1958:* On 31 January 1958, the first Free World satellite, Explorer I, was placed in orbit by a Jupiter-C missile, fired from the Atlantic Missile Range, Cape Canaveral, Florida. This project, a joint achievement of the Army Ballistic Missile Agency and the Jet Propulsion Laboratories, was completed only 84 days after the Army was given the mission.

9. *First intercept of very low altitude aircraft, May 1958:* In May 1958, a Hawk missile fired by the Army R&D contractor (Raytheon) successfully engaged an F80 jet target flying at treetop level at White Sands Proving Ground in New Mexico.

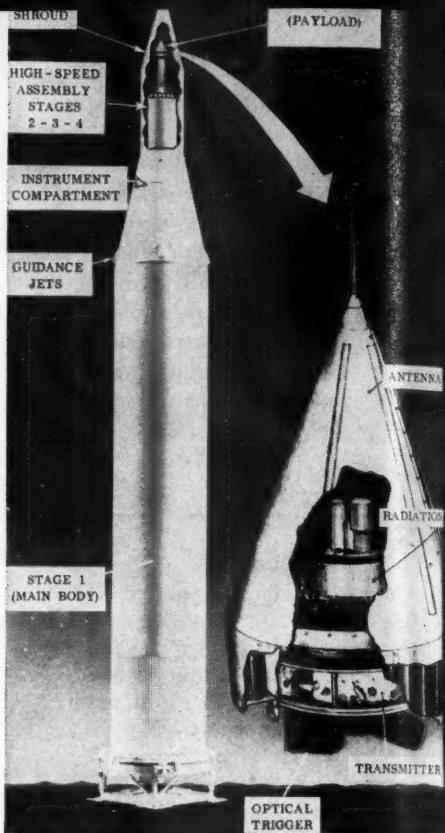
10. *First intercept of very high-altitude supersonic target missile, November 1958:* A Nike Hercules missile, fired by the Army R&D contractor (Western Electric) in November 1958, destroyed a supersonic target missile traveling faster than 1,500 miles per hour at an altitude greater than 60,000 feet.

installed in the shroud. At a pre-determined time, an automatic trigger ignited explosive bolts which released springs that pushed the shroud cone ahead of the coasting vehicle. The kick motor then ignited and blew away the protective cone, clearing the path for the cluster and probe.

The cluster was mounted on a bucket-shaped device which turned by electric motors installed in the Jupiter instrument compartment. The spin increased as Jupiter carried the vehicle away from Earth, thus stabilizing the flight of the high-speed rocket engines.

Each of the stages burned approximately six seconds. Timing devices allowed a short coasting interval between firings, so that 86 seconds elapsed between burnout of the first and fourth stages. At burnout of the fourth stage, velocity of the probe reached its peak of 24,800 miles per hour.

Eleven scaled-down Sergeant rockets were assembled in a ring as the second stage. Inside the ring was the third stage consisting of three rockets in triangular position. Inside the latter was the fourth and last stage, a single



Cutaway view gives picture of workings of Juno II which carried America's first space probe into orbit around sun. Larger details of the Pioneer IV are shown at right.

Tension mounts in the blockhouse as technicians carefully check final details before countdown that sends Juno II and its passenger Pioneer IV into space.



rocket secured to the probe. When this rocket burned out, a small explosive charge and spring separated it from the probe.

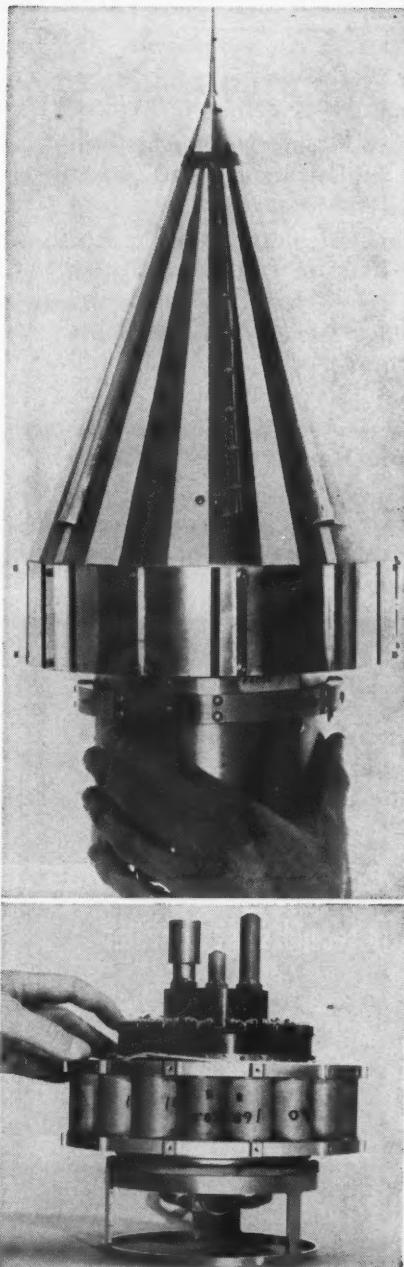
The Pioneers measured 23 inches in length and 10 inches at maximum diameter. The exterior was striped in gold leaf to increase conductivity because the shell of the cone-shaped probes also functioned as radio antenna.

JPL supplied a de-spin mechanism to reduce the spin momentum as the probe neared the lunar region. At the tenth hour of flight, two weights mounted on wires connected to the probe were released and began to revolve. By this means most of the kinetic energy was transferred from the probe to the weights, which were then broken off.

The shutter trigger mechanism being tested for possible use in later probes consisted of two photoelectric cells positioned in such manner that they would respond only to the image of the Moon. This light source would cause the cells to react and flash a signal to Earth. By a similar device coupled to a lightweight camera it may be possible to photograph the Moon.

OBJECTIVE of the Pioneers was not to hit the Moon but to probe as far as possible into space to test tracking and communications systems, to test the guidance system, to record temperature inside the vehicle, to measure cosmic radiation and to test the trigger device.

Success of Pioneer IV ushers in another busy year for Army space teams. During the previous year, high points of 1958 included:



Gold-washed fiberglass outer cone, above, housed actual payload, bottom, with radiation measuring instruments, voltage regulator, radio transmitter and batteries to send back much valuable information from outer space.

January—launching of Explorer I, first earth satellite of the Free World.

March—launching of Explorer III.

May—recovery of the first full-scale Jupiter nose cone fired over IRBM range.

June—deployment of the Redstone Ballistic Missile System to NATO.

July—launching of Explorer IV; recovery of the second full-scale Jupiter nose cone.

August—delivery of the first tactical Jupiter to the Air Force.

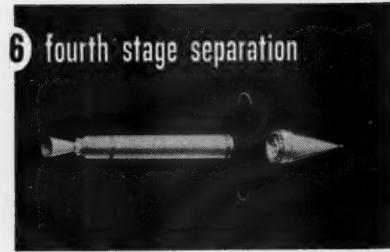
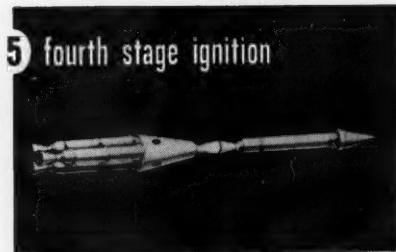
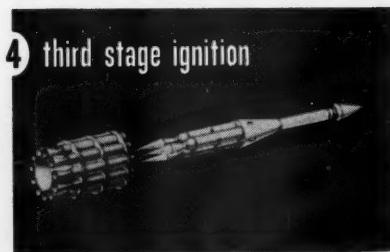
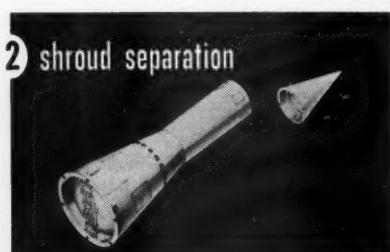
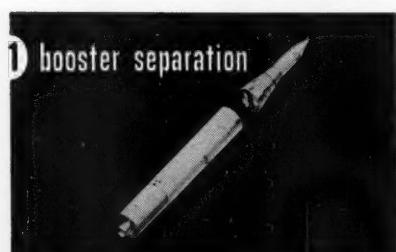
November—firing of the last Red-

stone of the research and development series.

December—Pioneer III launched.

THE YEAR 1959 should witness further evidences of the Army's capabilities to contribute to the national space program. The Army Ordnance Missile Command is now at work on the development for ARPA of a clustered booster which will yield 1,500,000 pounds thrust, and it has a part in Project Mercury, the NASA-sponsored program which will be climaxed by the entry of man in space.

STAGES IN LAUNCHING PIONEER IV



Keeping Current With the

CONTEMPORARY MILITARY READING PROGRAM

A synopsis of selected books included in the Army Contemporary Military Reading List of professional interest to Army members.

ARMS AND MEN by Walter Millis. Putnam, 1956, 382 pp. \$5.75.

This study of American military history examines the evolution of military policy from Colonial days to nuclear times. By retracing the history of American military institutions, the author seeks to shed light upon military problems which confront the Nation today.

ECONOMICS OF NATIONAL SECURITY by George A. Lincoln, William S. Stone and Thomas H. Harvey. Prentice-Hall, Inc., 1954, 601 pp. \$6.65.

In considering ramifications of wartime control, this book discusses how far it may be desirable to go in peacetime controls to perpetuate national existence with least disturbance in progress toward the ultimate goal of ideal living.

MIDDLE EAST IN WORLD AFFAIRS by George Lenczowski. Cornell University Press, 1956, 459 pp. \$6.

After reviewing the break-up of the Persian and Ottoman Empires, the author proceeds to show how World War I peace settlements shaped the history of individual Middle East states, then traces the development of each.

Army Information Training

THE Army Information School, Fort Slocum, New York, which became a Class II activity under the Chief of Information on 1 January 1959, has revised its program of instruction to give greater numbers of officers the type of training which will better prepare them for information assignments.

Effective with Fiscal Year 1960, five officer classes of eight weeks will be conducted instead of the three ten-week classes previously held.

The new program of instruction was staffed by the Chief of Information to all major commands and through all OCINFO divisions; it incorporates a variety of recommendations for improving the caliber of the course and its graduates. Application for attendance should be made through normal channels at least one month in advance of the reporting date for the class.

AN Advanced Public Relations Course for Army officers and civilian employees is being conducted this summer by the University of Wisconsin at Madison, Wisconsin, in conjunction with the Office of the Army Chief of Information.

Running from 19 June to 15 August, the 8-week course will provide graduate level instruction in principles and techniques of public relations and information duties at the policy-making level. A guest speaker program will bring authorities as visiting lecturers. In addition, an instructor from the Army Information School, Fort Slocum, New York, will outline current Army information policy, objectives and techniques.

Selection of twenty-five students was made by the Chief of Information on a best qualified basis from among officers and civilian employees selected for information assignments.

**Troops ready for the worst
fare the best after**

SURVIVAL



THE threat of nuclear weapons in modern war has wrought sweeping changes in today's Army. Our combat organization, fighting equipment and even tactical doctrine are significantly affected.

On the atomic battlefield units and individuals will be separated and dispersed over wide frontages to avoid the formation of lucrative targets. More so than ever before, the fighting man in the front-line

foxhole is likely to find himself cut off from his parent organization, suddenly isolated in a strange and lonely sector of the battlefield, perhaps behind enemy lines, possibly in enemy hands.

The Army's training programs must, of course, prepare for such an eventuality. More time and planning must be devoted to the psychological preparation of our soldiers to meet and overcome

TRAINING

Colonel John T. Corley

these conditions. We must insure that they are trained in the techniques of avoiding capture and, if it cannot possibly be avoided, then they must be prepared to survive the rigors of enemy captivity. We must strengthen their will to resist interrogation, to escape from enemy captivity, and to avoid recapture once they are free.

THE President of the United States underscored the necessity for this type of training when he prescribed the magnificent Code of Conduct for the American fighting man. If properly imbued with the

spirit of the Code, every member of the Armed Forces will readily measure up to the standards expected of him in combat or in captivity.

The Code of Conduct, I feel, is an excellent foundation on which to build a training program covering all aspects of behavior in enemy territory: survival, evasion, escape and resistance to enemy interrogation. Instruction in these subjects cannot be integrated entirely into other training, but must be presented individually and adequate training time should be allotted.

In the Ranger Department at the Infantry School we have instituted such a training program for several officer classes, devoting approximately seventeen hours of instruction to survival, evasion and escape training in accordance with the guidance in AR 350-225.

COLONEL JOHN T. CORLEY, Infantry, is Director of the Ranger Department, U. S. Army Infantry School. A 1938 graduate of West Point and a veteran of 12 campaigns, Col. Corley is perhaps the most decorated combat officer on active duty. He has been awarded the Distinguished Service Cross twice, the Silver Star eight times, the Legion of Merit twice, the Soldier's Medal, the Bronze Star Medal four times and the Purple Heart.

Survival Training

Five of the seventeen hours are given over to classroom-type training, much of which includes practical exercises involving maximum student participation. The remaining twelve hours are devoted to an evasion and escape exercise conducted in a remote area of the reservation. In this short time we are confident that the students receive a well-rounded orientation which will enable them to conduct themselves with honor under even the most adverse conditions.

The land survival phase of the course includes two hours of the "county fair" type of instruction wherein the students are rotated through five stations. The instructor at each station explains and demonstrates one important aspect of survival using only field expedient tools or equipment normally carried by the soldier.

The instructor at station 1 presents a general orientation concerning survival, emphasizing that the will to survive is a decisive factor. He develops the discussion by using the letters of the key word:

Size up the situation

Undue haste makes waste—
patience

Remember where you are

Vanquish fear and panic

Improvise

Value living

Act like the natives

Learn the basic skills

Station 2 includes a discussion of field hygiene and common injuries, and a demonstration of appropriate first aid measures. The instructor emphasizes the importance of personal hygiene in preventing disease and explains precautionary measures in caring for the feet. First aid measures, to include treatments for snake bite, severe lacerations, broken bones and drowning, are explained and demonstrated.

At station 3 the students are shown ways to obtain water in areas where there are no rivers or streams. The instructor demonstrates water purification by boiling or by adding chemicals to prevent dysentery, cholera, typhoid fever and parasitic infections.



Students who failed to make good their attempt at escape are gathered in by Aggressor troops, searched, marched off to a prison compound.

SURVIVAL

Station 4 in the survival course features a discussion of locating and preparing plant and animal foods in survival situations. The instructor shows the class how to prepare and use snares, traps and expedient weapons such as bows and arrows, clubs, sticks and nooses, and fish spears.

At the final station the instructor presents an orientation on shelters and fires in survival situations. Several kinds of shelters which can be made from natural surroundings are displayed, and the instructor demonstrates how to make fires for warmth, cooking and signalling purposes.

UPON completion of the survival training, the students are given a two-hour class on the Code of Conduct and resistance to interrogation. The six articles of the Code are explained fully, and emphasis is placed on the fact that adhering to the Code will help the soldier to counter or withstand enemy efforts to extract valuable information from him.

Experiences of American troops who suffered the ordeals of Communist POW camps during the Korean War are ample testimony to the importance of the Code. Time and time again it has been shown that American prisoners who revealed nothing more than their name, rank, serial number and date of birth were far better off than those who showed a willingness to talk "just a little."

I am convinced that effective instruction on the Code of Conduct will do much to prevent recurrence of our unfortunate experiences in Communist prisons in Korea. Not a single American prisoner is

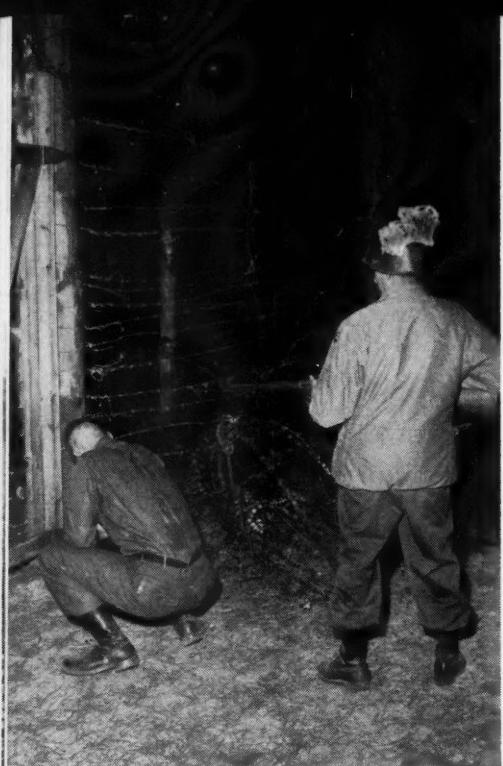


Students are early impressed with fact that the will to survive is a most decisive factor, then learn how to resist pressures of their "captors," how to elude them and survive.



Demonstrations are given in locating foods, use of snares and traps for wild game (above) and how to prepare shelters and cook food when cut off or making escape (below).





Awaiting interrogation, "prisoners" are often made to assume uncomfortable positions to instill fear of coming ordeal and also to minimize their opportunity for escape.

known to have escaped from a permanent POW compound and successfully made his way to friendly control during the Korean War. Some American prisoners were guilty of breaches of conduct, such as collaboration or mistreatment of fellow prisoners. More than a third of the American prisoners of war died in captivity.

AFTER orientation on the Code of Conduct, the students are moved into a simulated POW compound, where they receive training in resistance to enemy interrogation. An "aggressor" officer addresses the students in a degrading and humiliating tone.

They are marched into a small, hot room where they observe and participate in several types of interrogations.

One instructor demonstrates the so-called "friendly approach," professing a sympathetic attitude toward the prisoner. Many prisoners, expecting to be treated harshly and brutally, are thrown off balance by a "friendly" interrogator and begin to talk freely. This technique was used successfully in many Communist camps in Korea.

A similar interrogational technique, known as the "threat and rescue method," is demonstrated next for the students. This form of interrogation is based upon the philosophy that most individuals respond with gratitude to someone who rescues them from a situation which threatens bodily harm. In this case, the POW is placed in a precarious position by a menacing prison guard who threatens to beat him. A "friendly" interrogator then appears on the scene to rescue the prisoner, hoping that the prisoner, in his gratitude, will talk freely.

Another effective interrogation technique described in the course is one in which POWs who have lost their identification tags are accused of being spies, and are forced to reveal factual military information to prove that they are not espionage agents.

Other information-gathering techniques of the enemy which are demonstrated include the use of hidden microphones; the "planting" of enemy agents among the prisoners in the guise of chaplains, doctors, or Red Cross representatives; and the staging of spurious executions of fellow prisoners in an attempt to force others to talk.



Abuse and threats of even worse treatment are common methods of intimidating the newly captured soldier into revealing information or signing incriminating statements which may be used in propaganda efforts involving his entire nation.

The most prevalent question in these interrogation classes is how to combat these various enemy techniques. The answer, of course, lies in Article V of the Code of Conduct: "When questioned, should I become a prisoner of war, I am bound to give only name, rank, service number and date of birth." This is the best and the only defense. Prisoners who attempt to give a phony story, or to talk on nonmilitary subjects only, are easily led into traps by a well-trained interrogator.

VARIED types of isolation devices are also shown during the instruction on resistance to enemy interrogation. One of these is the

so-called "black box," a cabinet-type inclosure, which is so small that the occupant is forced to squat or kneel. Another is the "grave," a rectangular affair resembling a coffin, in which the prisoner is placed face down with his arms along his sides. These devices cause physical and psychological anguish, and they have been used effectively by the Communists to extract information from prisoners.

At this point the students are ready for an orientation on evasion and escape — a one-hour discussion and demonstration followed by a briefing for the twelve-hour practical exercise which covers all aspects of the survival, evasion and escape course.



Fake beatings may be staged to make weaker prisoners believe they will face the real thing.

THROUGHOUT the orientation the instructor emphasizes that strong will-power and a determination to evade or escape often made the difference between life and death for a man who is trapped in an enemy-held area. If captured, the student is cautioned to remain alert for an opportunity to escape as soon as possible, for the longer he waits the more difficult escape becomes.

In cases where a number of Americans are cut off in enemy territory, they are taught that the senior individual present should take command of the group and organize their effort for subsequent evasion tactics. To promote success when the situation dictates that evasion tactics be employed, the evaders should be broken down

into small groups under the command of any subordinate leaders who may be available.

In order to accomplish their mission, the student "evaders" must use every military skill they have learned, including map reading, patrolling and individual combat skills, and the techniques of survival and evasion. In selecting their route for returning to friendly units, they follow the roughest terrain, avoiding roads, trails and areas where they are likely to encounter humans. Evaders who have succeeded in infiltrating through enemy areas are given a hot meal; others are processed as prisoners through collecting points to the POW compound. Opportunities are provided for aggressive prisoners to escape.

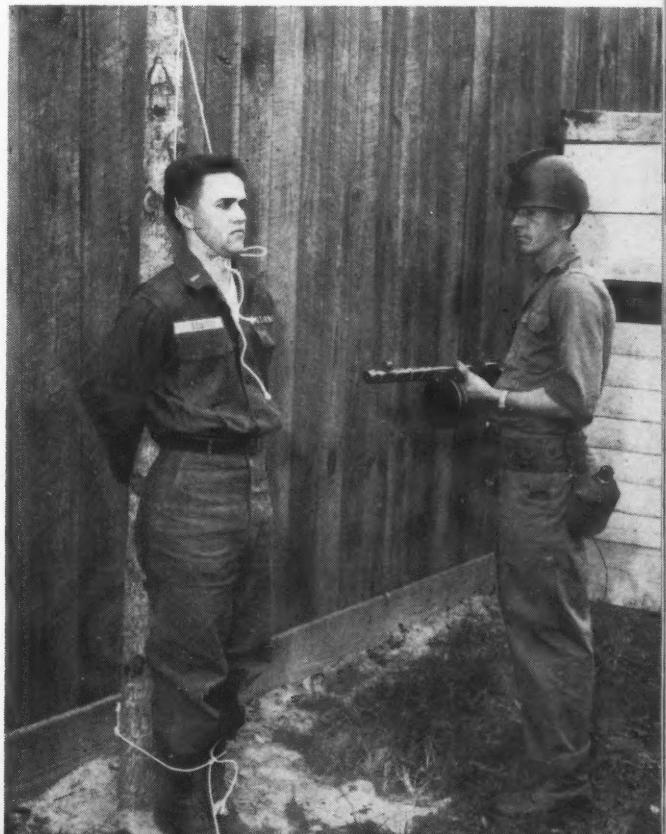
THE twelve-hour practical exercise which culminates this training portrays a situation in which the student must evade and escape from the enemy in an area located close to friendly units. The techniques in this situation necessarily differ from those employed in an escape or evasion operation from deep within enemy territory.

Each student assumes the role of the senior officer present in a 60-man group of Americans whose position has been by-passed by aggressor troops and cut off behind enemy units. The group includes elements of several units which had been cut off. Because they lack crew-served weapons and ammunition, they are unable to defend in place or fight as a unit. Their last

instructions were to remain in place until darkness, then break up into small groups and infiltrate through the enemy area to a designated zone in the friendly sector.

The students are divided into three- to five-man groups and are moved to the release area where they are placed in a perimeter. A senior leader is chosen to organize and plan the operation. He orients each group leader on the situation and an exact route to take, establishing a release time and point for each group. He arranges for ammunition and equipment redistribution, issues instructions for action in case of enemy contact, prescribes the password and designates an area where it will be safe to enter the friendly sector.

In "threat and rescue" method, guard interferes to stop execution, hoping grateful prisoner will then talk.





Those refusing to talk are sometimes threatened with actual execution to induce them to collaborate.

Just before the senior leader concludes his orientation, an aggressor patrol strikes the area, creating realistic confusion as the problem begins.

The aggressor density in this exercise is comparable to an aggressor enemy forward position and, except for several walking patrols, all aggressor positions are stationary. The student is not hunted down, but is forced to use evasion tactics to avoid capture. If the students follow difficult avenues of movement, such as stream beds, swamps, and thickly wooded areas, their movement normally is not detected by the aggressors. However,

if they choose to follow roads, trails or other commonly used routes, they are usually captured.

If a group of students is captured by the aggressors they are transported to a temporary prison enclosure comparable in size and organization to a battle group POW collecting point. Here they are searched and their equipment is confiscated. Eventually they arrive at a rear area POW compound.

BEFORE being interrogated, the "prisoners" are locked in the compound for an hour—a technique used commonly by the Communists in Korea. In their solitude, the

prisoners' imagination begins to work. They wonder what will happen next, and they remember hearing rumors about the brutal treatment of other allied POWs. After such an isolation period many weaker prisoners cooperate willingly with the interrogator.

During the brief interrogation which follows, an aggressor officer tries to obtain the student's signature on a blank piece of paper. If the student signs the paper, the aggressors forge a propaganda statement above the signature saying that the Americans are employing germ warfare or other illegal methods.

When students who are successful in escaping or evading capture arrive at the designated re-entry point in the friendly sector, they

pass through a platoon outpost line. Here they are challenged and led to a debriefing officer, who debriefs them for tactical information and critiques them on their conduct of the problem, thus completing the exercise.

I BELIEVE that the seventeen hours of instruction in this "need-to-know" subject are well spent, and that the student who completes the course is adequately grounded in the techniques of survival, escape, evasion and resistance to enemy interrogation. The American soldier must be able to outfight and outfox the enemy—any enemy. Without tough, realistic training there is little hope for survival on the isolated battlefield of the future.

Use of isolation methods such as the "grave" sometimes is invoked by guards to extort "confessions" or force stubborn prisoners to carry out enemy wishes.

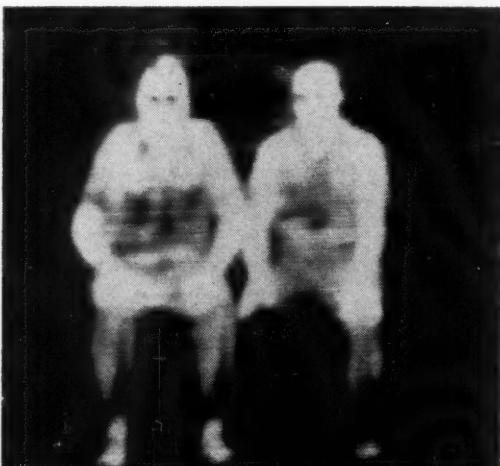


For Night Photography

THERMOGRAPH



A PHOTOGRAPHIC device which uses heat or infrared radiation emitted by the subject to produce an image in total darkness has been developed under sponsorship of the U. S. Army Engineer Research and Development Laboratories, Fort Belvoir, Virginia. Called a Thermograph, it was developed as a night vision aid to determine the basic characteristics a military thermal imaging device should have. Such devices are expected to provide a means for night reconnaissance, terrain mapping and target location. It may also be found useful in detection of camouflage.



Radiation produces ghost-like but easily identifiable figures even in total darkness by use of the Thermograph. Illustrating the device's effectiveness, man on right actually has one leg.

One Hundred Million Photographs a Second on this

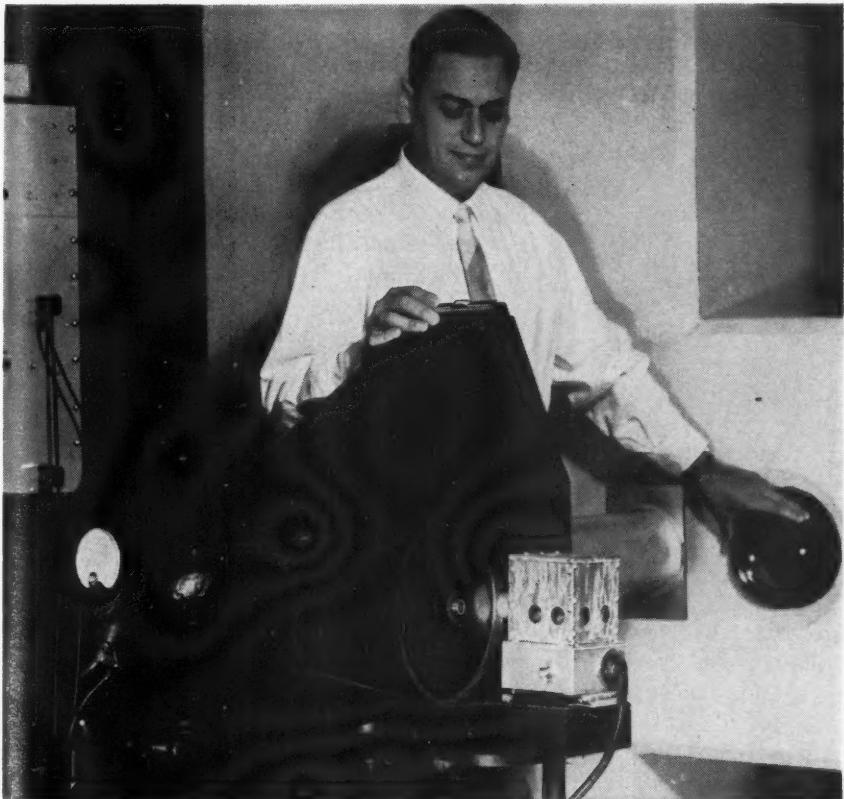
HIGH SPEED CAMERA

SHOCK and explosion waves that move at speeds up to 40,000 miles an hour—about half an inch in a millionth of a second—are “stopped” with a new high speed moving picture camera that can take photographs at the fantastic rate of a hundred million a second. It is used as an aid to research at the Ballistic Research Laboratories, Aberdeen Proving Ground, Maryland.

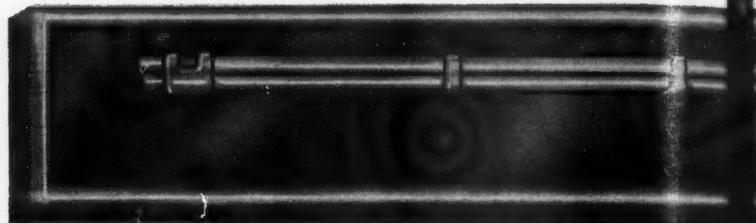
The camera was designed and constructed by Morton Sultanoff, a research physicist at the Laboratories who assembled it from parts, odds and ends and scrap components at a total cost to the Government of less than \$500.

A special framing grid and rotating mirror combination are used to achieve the ultra-high rate of taking pictures. The framing grid, 4x4 inches in size, is a focal-plane shutter consisting of a series of parallel, narrow, optically clear slits, cut at uniform intervals through an opaque plate. The width of the slit determines the exposure time while ratio of spacing to the slit width determines the total number of pictures obtained for one run.

Pictures obtained by the new camera are expected to add vital information to knowledge required for design of future weapons. Mr. Sultanoff, educated at Drexel Institute of Technology and at Johns Hopkins University, is in charge of the Detonation Section at the Ballistic Research Laboratories.



THE MARK



GENERAL BRUCE C. CLARKE

DURING the early years of World War II there arose a compelling obligation to give special recognition to the mud-slogging Infantryman for his courage and sacrifice. It was the foot soldier's sad lot to bear the brunt of the casualties. It was his unfortunate task to endure the heat, the mud, the cold, the fears and the loneliness of the battlefield. His was a unique and challenging job. He deserved to be singled out for special honor.

In an effort to enhance the Infantryman's esprit and to give him the recognition he so richly merited, General Lesley J. McNair proposed that the doughboy have a distinctive emblem, a mark of his own. Early in 1943, he recommended that a "badge of appropriate design" be awarded to selected Infantry soldiers in order to give them new incentive and recognition for their skill. It was from this proposal that the Expert Infantryman Badge, and its close kin,

the Combat Infantryman Badge, evolved.

The prestige that accrues to the wearer of the Combat Infantryman Badge is widely known throughout the military service today. Wearers of the badge frequently cherish it even more highly than their other awards and decorations. Often they omit displaying their campaign ribbons, letting the "blue badge of courage" stand alone as testimony to the fact that they experienced combat in its toughest and most challenging form, as Infantrymen.

By many, the Expert Infantryman Badge is considered almost as difficult to earn as its sister award, for it requires a demonstrated skill in virtually every aspect of Infantry training. For the soldier who hasn't had a chance to earn his badge in combat, the Expert Infantryman Badge offers a splendid opportunity to gain status and prestige. The bearer of the badge can wear it with considerable pride, for he knows that all good

CODE OF A MAN

**Earned with Skill,
Worn with Pride—**



soldiers—Infantrymen and others—recognize that the test is a grueling and discriminating one. He also knows that his comrades in

arms recognize the badge as the mark of a man.

I can speak with some authority about this, because I myself am not

The Mark of a Man

an Infantryman. I know from personal experience that the wearer of the Infantryman Badge—Combat or Expert—is a soldier's soldier. He is respected throughout the Army by members of all branches, and by members of the other services as well. I can assure you that those of us who have served most alongside Infantrymen, and I include myself in this group, are the staunchest admirers of the wearers of the blue badge. There is no emblem which we respect more.

For the Infantry reader there is no reason to review the requirements for the Expert Infantryman Badge, but I am sure that other readers of the DIGEST would be interested and impressed by them.

Any Infantry officer or enlisted man assigned to an Infantry unit and possessing an Infantry MOS is eligible to compete for the Expert Badge (EIB) as specified in Army Regulations 600-70 and 600-73. Briefly described, the test is conducted in two phases—the first in the unit to which the applicant is assigned, the second in the parent organization.

Phase One of the test is what might be termed preliminary qualification. To complete this phase, the EIB aspirant must have a

character rating of excellent, and must qualify in field stripping and assembling both his individual weapon and one crew-served weapon of his choice. Further, he must qualify as sharpshooter or better with his primary individual weapon, or as a first-class gunner or better with his crew-served weapon. Finally, Infantrymen who are armed with the service rifle must qualify as experts with the bayonet, as prescribed in FM 23-25.

Phase Two of the test consists of a series of written examinations and practical exercises on virtually every type of Infantry skill. The candidate is tested in military courtesy and discipline; first aid; field sanitation and military hygiene; demolitions, mines and booby traps; patrolling; map reading and the use of the compass; military intelligence; adjustment of artillery and mortar fire; individual cover and camouflage; field proficiency in individual or crew-served weapons; basic signal communication; hand grenades; and chemical, biological and radiological warfare. In addition, the candidate is required to pass the Army Standard Physical Fitness Test, which includes sit-ups, push-ups, squat jumps, pull-ups and a 300-yard run.



GENERAL BRUCE C. CLARKE
Commanding General,
U. S. Continental Army Command,
Fort Monroe, Virginia

At this point I would like to stress the fact that candidates for the EIB must attain a satisfactory score (at least 70 percent) on *every subject* in Phase Two of the test, and they must obtain a minimum of 250 points on the physical fitness test. In other words, an applicant conceivably could achieve a score in the 90s on every subject but one, and *still not earn the badge* because he failed in a single subject.

This fact illustrates the truly distinctive meaning of the Expert Infantryman Badge. It serves notice that the proud wearer of the blue badge is an Infantry soldier *par excellence*. Confident and fully competent to enter battle, he is a well-polished, 100 percent qualified doughboy who has been thoroughly tested and has proven his worth. After combat as an Infantry soldier he is privileged to add the silver wreath of the Combat Infantryman Badge to the blue field of the Expert Badge.

THE Expert Infantryman Badge is not only a searching appraisal of the Infantryman's combat potential; it is a valuable stimulant for training and morale as well. Commanders of Infantry units in which the test is offered speak glowingly of the rise in interest and competitive spirit among the participants. In many organizations candidates for the badge willingly spend their off-duty time studying reference manuals, practicing crew drill and exercising in the gym in preparation for the tests. One unit competes earnestly with another, striving to produce a higher number of experts than the outfit next door. The effect of this intense interest

on unit and individual proficiency is most gratifying.

Preservation of the prestige of the EIB is maintained by the precise manner in which the tests are conducted. The test board of officers and noncommissioned officer assistants is selected with utmost care, with a view toward choosing men who are not only expert in their subjects but who are enthusiastic and of high moral caliber.

Some divisions have found it beneficial to prescribe preliminary tests at battle group level, in order that the candidates will have an appreciation of the scope of the test and an opportunity to learn which subjects require further study or practice. Normally, before the test is administered, it is examined thoroughly by a review committee to ascertain that it is fair, comprehensive and at the appropriate level of difficulty.

I am convinced that the Expert Infantryman Badge test provides a valuable training vehicle which assists immeasurably in attaining a high state of combat proficiency and unit esprit. I have always urged commanders to give their full support to EIB tests and to give full recognition to the achievements of the wearers of the badge. Through the EIB we have a means to inspire the Infantryman to be a better and a prouder soldier. To be a candidate for the Expert Infantryman Badge is a privilege—to win it is an honor.

For those who are not Infantrymen, I ask you to look carefully at the soldier who wears the blue badge. He is an expert, a real professional. Note the sparkling silver rifle against the blue field. It is truly the mark of a man.



FIELD TECHNIQUES are stressed. Candidate probes for mine, left, while another shoots an azimuth. Man at bottom left uses compass to orient map.



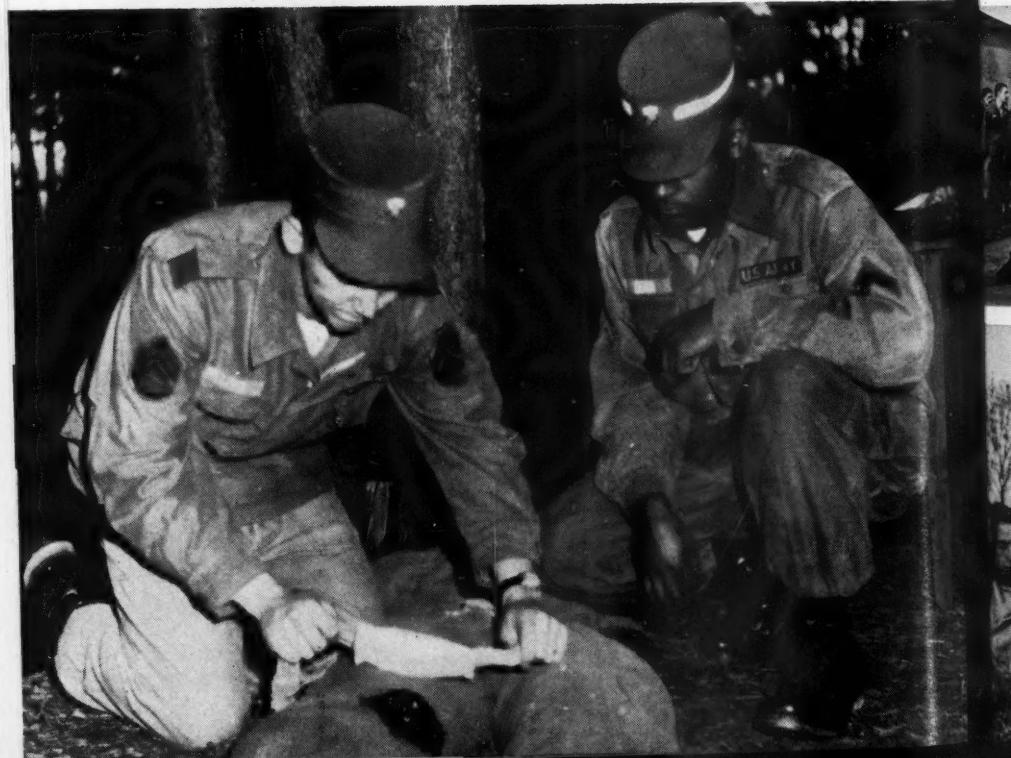
JES are
candidate
one, left,
shoots an
bottom
pass to



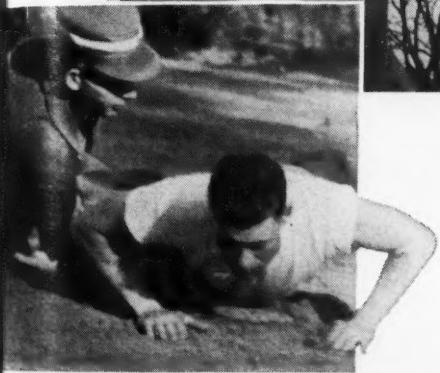
The Mark of a Man



PERSONAL HYGIENE
rates high — candidate
demonstrates method of
water purification (left),
how to apply compress
to a wound (below).

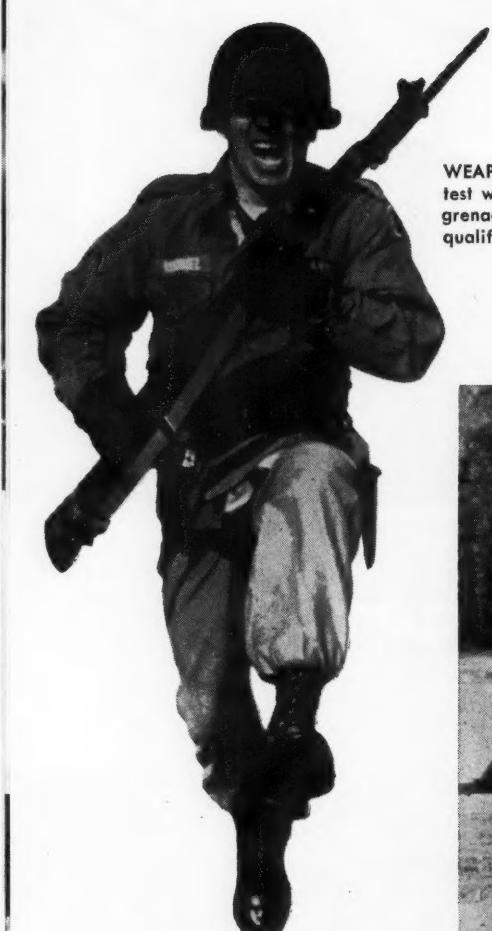


ENE
candidate
method of
(left),
compress
v.

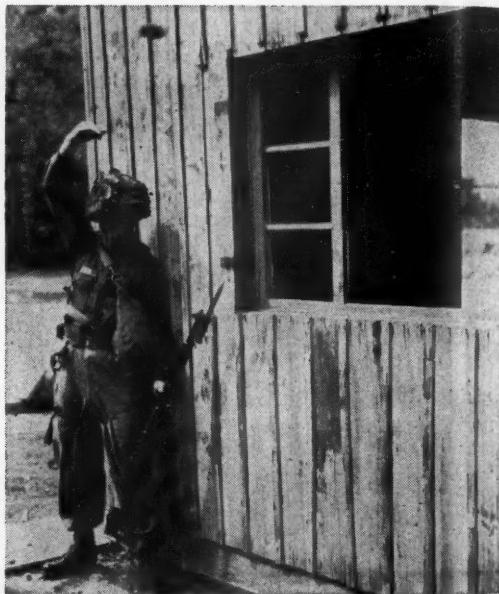


PHYSICAL FITNESS test reveals ability to face combat conditions. Candidates go through a series of squat jumps, pull-ups, push-ups, sit-ups, and a 300-yard run against time.

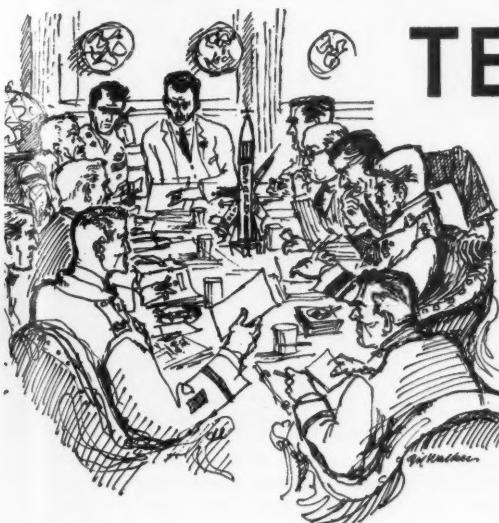




WEAPONS PROFICIENCY forms one entire phase of test with each aspirant proving ability with bayonet, grenade, individual or crew-served weapon, and qualifying as sharpshooter with individual weapon.



**The Army-Industry team which contributes
so significantly to the Nation's defense
promotes public confidence by**



TELLING THE STORY

Colonel George R. Creel

A SMALL boy rips open a box of cereal to get at a model of an Army missile—

An older lad puts together an operational Nike missile site from a scale model hobby kit—

A plant employee reads in his company's newspaper a description of the work he personally has done on an intricate component of Army equipment—

An executive of the same plant takes part in a ceremony, attended by high Government officials, unveiling the first production line model of a new Ordnance item.

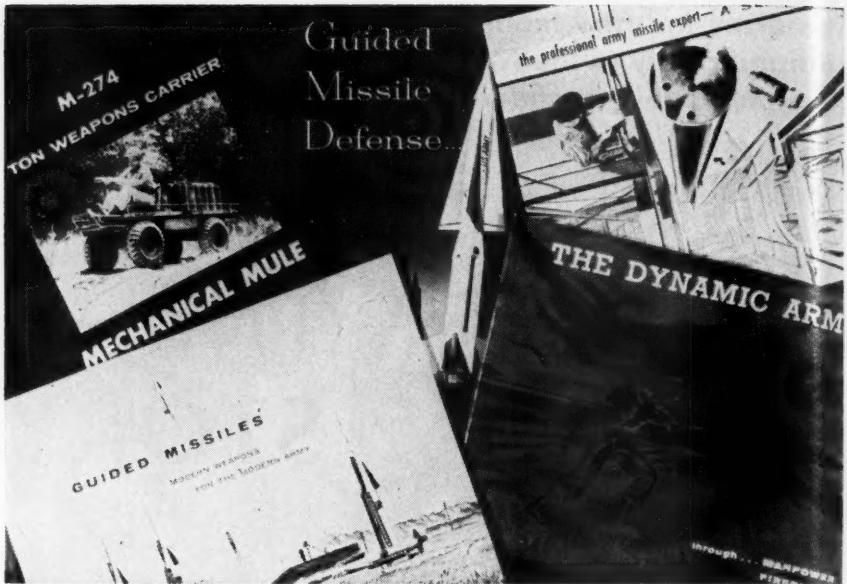
In these and scores of other ways, running the gamut of the entire communications field, commercial and industrial concerns are helping to acquaint the public with one or another of the varied, complex phases of Army activities.

From this program both industry and the Army benefit. The Army receives a gigantic bonus in the form of institutional advertising which, short on funds and long on regulations, it could not possibly purchase itself. Commercial firms benefit in prestige and goodwill associated with the performance of tasks vital to the national defense.

At the same time, the Army must continually safeguard itself. It cannot endorse products nor can it allow itself to be "used" by promoters of questionable projects.

Institutional-type advertising with an Army theme is processed in much the same way as a news release. Copy and art are reviewed for security, propriety, accuracy

COLONEL GEORGE R. CREEL, General Staff, is Chief, Civil Liaison Division, Office, Chief of Information. Art by Gil Walker.



Pamphlets and other materials produced by industrial firms are distributed at press conferences, Army open houses and exhibitions; they also may be used in Troop Information programs and by science classes in public schools.

and policy by the Departments of Army and Defense.

Normal clearance channels are through the Office of the Chief of Information, Department of the Army to the Office of Security Review, Department of Defense. Prior to submission to the Office of Security Review, OCINFO insures that the technical agencies concerned have been consulted and have cleared the material.

APPROVED industry cooperation in telling the Army story may be grouped in three broad categories—commercial firms that are actual partners in research, development and production of Army equipment; firms that use the dramatic impact of Army themes to attract attention to their own goods; and the toy manufacturers.

In the first category are those firms which cooperate in making significant contributions to American technology and to the ability of the Free World to defend itself. They form the Army-Industry team which, working together, has produced more efficient weapons, longer-lasting and lighter equipment, more palatable and nourishing foodstuffs. They form that team which has benefited the public as well as the Army.

In telling their story to the public, they use all forms of institutional advertising, aimed both at their own industry and at the general public. They advertise in trade journals—that is, publications devoted largely to a specialized industrial field—to tell potential customers about their accomplishments for the Army. This is a major



Institutional advertisements prepared by commercial firms for use in trade publications, newspapers, and magazines provide a bonus benefit, help to acquaint the public with many and varied phases of Army activities.

publishing endeavor in the United States, with literally scores of magazines in fields ranging from heavy manufacturing to electronics to foodstuffs.

These firms also advertise in newspapers, magazines, on radio and television, and outdoor billboard displays, to tell the general public of their accomplishments. Much of this form of advertising is aimed at building confidence in their consumer goods by analogy with the high quality and precision of their Army products.

Many firms also belong to associations which have an Army or other Armed Forces connection—such as the Association of the U. S. Army, the Quartermaster Association, the National Defense Transportation Association, Armed Forces communications and Elec-

tronics Association, and others covering nearly all of the Army's branches. Many of these associations publish their own magazines, in which commercial firms advertise heavily. These magazines also carry news and interpretive articles by military experts.

Normally, industrial firms prepare the original layouts and texts of their own advertisements. However, it is not unusual for agencies within the Department of the Army to offer ideas that might improve or enhance the advertisements. Such suggestions often come from the Technical Liaison Officers of the various Army branches, or from Army representatives engaged in some phase of research and development.

Recently a representative of a large defense contractor made an

Telling the Story

intensive survey of his company's advertising budget, admittedly with a view to cutting down expenditures in this area. He learned, however, that this type of advertising did much to enlighten the public about the company's activities and produced an extremely high quotient of good will toward the company. As a result, this particular firm now has under way an even more ambitious advertising program featuring Army themes.

THE internal publications of the various industrial firms are potent employee public relations media. Aimed at sustaining morale, they tell the workers what the company is doing, and serve to carry messages from management to the employees. Like the industrial and trade journals, they constitute a tremendous field. In all, there are an estimated 8,000 such publications with a combined circulation of more than 150,000,000 copies per issue. They range from weekly news sheets to elaborate monthly publications.

Army information personnel often are invited to provide additional details to enhance a story being prepared by the editors—or even to contribute entire articles. Often these articles are the means by which employees learn how the products they help build are actually used by the Army.

Although, as has been pointed out, the Army obviously cannot share expenses of institutional advertising, it can and does cooperate closely with industry in various forms of public events. These often have both internal and external public impact, as when Army and industry join to stage special production line shows at a manufacturing plant for the benefit of news media representatives. Usually the commercial firm marks the occasion with lunch, refreshments and entertainment, while the Army contributes speakers and displays of equipment.

On other occasions the Army may participate in an event marking delivery of the first production model of an item—as the ceremony



At Project Ammo, Chief of Staff Gen. Taylor talks with Clifford F. Hood, president, U. S. Steel, and Tom C. Campbell, editor of *Iron Age*.

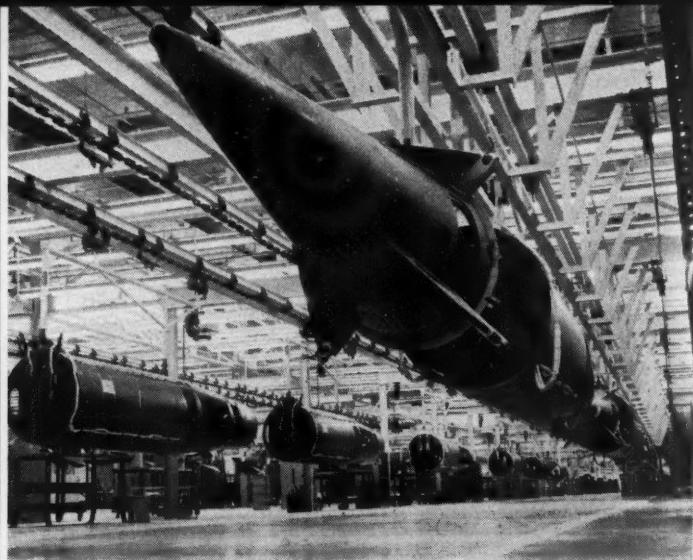


Traditional Army mule looks on as first Mechanical Mule goes to Army in ceremonies attended by Lt. Gen. Cummings, then Chief of Ordnance, Mr. S. A. Girard, Jr., Willys Motors, Maj. Gen. Sherburne, 101st Airborne Division.

staged at the time Willys Motors delivered the first production-line Mechanical Mule to the Army. Among those present were the then Chief of Ordnance, Lt. Gen. E. L. Cummings, the Commanding General of the 101st Airborne Division at Fort Campbell, whose unit was scheduled to receive the new vehicle, members of his staff and a small detachment of troops. A few weeks later, Willys Motors made movies of the troops training with the new item for release on nationwide and local television programs. The films also were made available to the Army for possible use in training aids.

Industrial firms often participate when the Army unveils some new weapon or piece of equipment. Usually Army and industry are joint participants in the attendant press briefing, which generally results in nationwide press and newsreel coverage.

Frequently industry provides informational materials for which Army funds are lacking—brochures, charts, posters and so on. Many of these special publications, which often contain articles by ranking Army experts, are used in the Troop Information Program; and even further, they are frequently in great demand in public



Nike-Hercules conveyor line was viewed by newsmen at recent Army-industry tour of Charlotte Division of Douglas Aircraft plant.

schools as adjuncts to science studies. They also are used by the Army in open house or other public displays.

In still other joint public relations ventures, Army and industry working together have achieved many notable successes. One example is Project AMMO, conducted a year ago at Fort Bliss, Texas, and the White Sands Missile Range, New Mexico. Fourteen major Army contractors teamed with the Army to stage the show which now is recognized as one of the outstanding public relations efforts in years. (See "Project AMMO," September 1958 DIGEST.)

Purpose of the event was to acquaint key members of the executive branch of the Government, senior military commanders, industrial representatives and information media with the capabilities of U. S. Army missiles. Out of an arsenal of eleven missiles and rockets on display, nine were actually launched. The assembled groups included more than 100 representatives of news services.

IN the second broad category, that of commercial firms who do not primarily produce Army goods or equipment, the use of military themes to call attention to commercial products takes two general forms. One is the use of illustrations of Army personnel or equipment in advertisements. Such themes have been used repeatedly in advertising automobiles, cigarettes, clothing and many of the niceties of American living.

The other form is more direct, such as manufacturers of breakfast foods using "giveaways" of scale models of Army weapons, missiles, trucks or aircraft in the package. In this area, "send-ins" also are frequently used—send the box top with a small cash payment for a more impressive model which usually costs much more on a toy counter.

Most of the firms employing this promotion tie in their advertising in press, radio and television with an introductory offer. Many an American youngster urges his mother to buy a particular brand

of breakfast food as a result of a television commercial describing the "give-away" in a box of cereal.

Generally, give-away promotions containing an Army theme are cleared by the Army prior to release. Many of these are developed with Army assistance. Companies should obtain Army permission to use scale models of Army weapons and equipment. Permission is virtually automatic, since unclassified blueprints, sketches, written materials and the like must be obtained from the Army prior to producing the model. Manufacturers may request such assistance through the Office of the Chief of Information or the technical agency concerned.

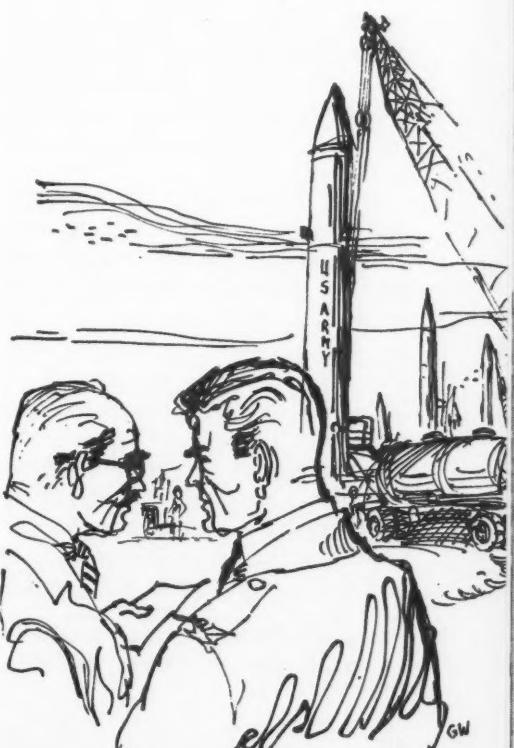
A THIRD form of commercial cooperation popularizing Army themes is provided by toy manufacturers. Items range from tanks, trucks, missiles, aircraft through model kits that enable the youngster to assemble replicas of the items. Also seen on toy counters throughout the land are more complicated toys that enable the younger generation to build a completely equipped Honest John battery, or even a more complicated Nike site—sometimes with scale models that actually work. Usually the commercial manufacturers receive a dividend here since their names are used on the models.

As a result of such give-aways and the toy counter items, many a young American today is embarking on a new form of collecting—Army equipment. They build their sets, often trading one another for items, or building their own equipment from model kits. As a by-product, many are gaining a knowledge of mechanics, of basic

science, and of manual skills that will stand them in good stead, often in the Army itself in the not too distant future.

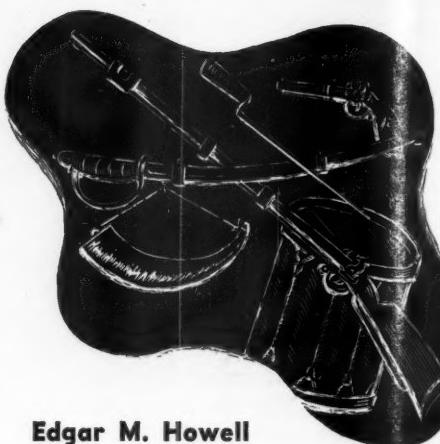
IN the years since World War II, Army and industry have formed a continually expanding mutual team. That team not only has made tremendous strides in technological areas, but also has accomplished much in informing the public of this progress.

As the Army welcomes industry as a partner in research, development and production, it also welcomes it as a partner in informational undertakings. In helping industry tell its story, the Army helps further the much broader information mission of national defense.



*Make your regimental
trophy room a*

Wellspring of Esprit



Edgar M. Howell

IN THE years since World War II, the Army has shown an increasing interest in its history and traditions. It recognizes these as valuable troop morale factors and as bases for enhancing combat efficiency. This is evidenced in new Army Regulations, in the Combat Arms Regimental System, and in an established program for informing units of their lineage and battle honors.

Army Regulations 220-306 state that Army units make their own history and traditions; they direct units to build unit historical document files; they instruct units on the maintenance and use of such files; they provide for storage of historical files and organizational properties during periods of the unit's inability to care for them; and they provide for the return of these files and properties at the request of the unit commander.

The Combat Arms Regimental

System reestablished the regiment with its component battle groups as the cornerstone of the Army. It reiterated the value of unit history and tradition.

Since 1947, the Office of the Chief of Military History has written and distributed brief organizational histories of Army units. A unit's Official Statement of Lineage and Battle Honors is that unit's "deed to properties," its "birth certificate," and its "service record." In addition this document serves as an outline for a more comprehensive history.

In the last several years an increasing number of organizations have turned to the establishment of trophy rooms as more graphic means of telling the story of their pasts. In the main, this is a healthy development, especially at the regimental level, for so much of the proudest history, and certainly the most glamorous and picturesque, of the Army has been made by single regiments, battalions, or even companies.

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Certain difficulties and pitfalls should be recognized and avoided, however. First, it must be recognized that no unit in the Army has a permanent "home" as such. Geographical instability can play havoc with the collections of a unit trophy room, especially if there has been no adequate planning for change of station, oversea movement, or the like. And even if provision has been made for such moves, unless extreme care is taken the items may be lost or scattered.

Second, it must be recognized that the existence of any unit trophy room is wholly and completely dependent on the support of the unit commander. Although regulations state that no museum may be discontinued without the approval of the Chief of Military History, there are no rules regarding its establishment. Thus the regulation is more illusory than real, since the Office of the Chief of Military History, a staff agency with an advisory rather than a command function, in the last analysis may have no knowledge of the existence of any particular one. Realistically the unit commander can establish or do away with his trophy room as he sees fit.

Third, there is the ever-present danger that the trophy room may be evicted from its quarters during a major troop shift, mobilization or partial mobilization.

These are real dangers. The historical properties emblematic of the Army's history, are severely limited. And if they are lost, it does not matter whether they were lost in a change of station, because of a lack of interest on the part of the commanding officer, or through

eviction. When they are gone, they are gone forever—they cannot be replaced—and not only the unit and the Army, but the Nation as well, is the loser.

Trophy rooms, like museums, are not established by order—they grow. But they will grow only with thought, planning, taste, and effort. And the chance of their doing so is again dependent on the unit commander.

The job cannot be rushed. Realistically, it will or never should be complete; rather it must constantly grow and improve in quality. It should never be treated as a short-term public relations project, but rather as something which will do credit to the unit throughout its history. The officer or enlisted man assigned the project should have a college background in American history; and he should want to do the job on as near a full-time basis as the training schedule will allow.

It should be realized that the project is going to take not only time but intelligent work—planning, research, imagination, taste. At the outset, plans should be drawn up to cover the contingencies of a change of station within the continental United States or movement overseas. In the latter case, the collections should be stored; the chance of their being lost or damaged in transit is too real. The plan also should cover general or partial mobilization, combat, transfer of a sub-unit, or possible eviction from quarters. It should contain details as to disposition or storage of specimens.

In planning the actual displays, several basic rules apply. No unit should try to do more than tell its



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own story. Leave the history of the Army as a whole to the larger public museums with proper facilities.

The history of the unit—and only the unit—should be strictly adhered to. The framework for this plan should be the unit's Official Statement of Lineage and Battle Honors. The lineage statement—available from the Office of the Chief of Military History—is a brief history of the unit including battle honors and decorations.

The lineage should be carefully studied in relation to such basic references as *The Army Lineage Book—Volume II, Infantry*, if the unit is infantry (especially the organizational narrative prefacing it); Oliver L. Spaulding, *The United States Army in War and Peace*; ROTCM 145-20, *American Military History, 1607-1953*; Francis B. Heitman, *Historical Register and Dictionary of the United States Army*; Harold L. Peterson, *The American Sword*, and any of several standard works on American firearms. All of these may be obtained through post libraries on inter-library loan.

A tentative outline exhibit plan should be drawn up in relation to physical space and relics and graphic material available. Whenever possible, this plan should be discussed with and reviewed by someone experienced in museum work.

Primarily, the history of the unit should be treated chronologically. Here, of course, the lineage will be especially helpful, for it is in itself a chronology. Certain subjects—former commanding officers, outstanding decorated members of the unit, and the like—can be treated topically with good effect.

FOCAL POINT of the exhibit should be the unit color. Its coat of arms, campaign and decoration streamers are emblematic of all the unit has been, has done and is supposed to do and be. If the trophy room is to have real meaning, the color should be kept there on display, rather than behind the commanding officer's desk. Accompanying the color should be its blazonry—that is, a description of the coat of arms and an explanation of the heraldic devices comprising it. This blazonry can be obtained from Heraldic Branch, Office of the Quartermaster General.

Thus with the color as a point of departure, the story can be told. The fact that no actual relics are available at the start should not be allowed to influence the planning. There is a wealth of good graphic material available on all periods of the Nation's history. Imaginative use of photographic reproductions and concisely and tastefully written labels can serve until relics can be obtained.

Since the greatest number of good pictures are to be found in bound volumes, considerable digging may have to be done. In this matter the reference staff of the nearest library of any size may help. In the last few years a number of excellent pictorial histories of America have been published which will prove fruitful sources. The post signal officer should also be able to help with reproductions of old prints. In lieu of expensive color photography, tinting in one color is cheap and effective.

Actual relics with strict regimental association, of course, are most desirable. Personnel of the unit,

Trophy rooms like this of 2d Armored Cavalry Regiment, Fort George G. Meade, can serve as a valuable aid in building troop morale.



past and present, should be canvassed first, then local collectors organizations. When collecting in these ways, don't be a "pack-rat," taking everything offered, for you may wind up with much material which cannot be used to advantage. Decide what is needed and accept only that. At times this may take considerable tact.

Standard weapons, uniforms, and equipment appropriate to the unit's branch of service should be sought. A certain amount of captured enemy material may be desirable, but this should not be overdone. Remember, it is the history of the unit that is being depicted, not the enemy which it fought. Tie the specimens together with graphic material and good topical and transitional labels, to provide continuity and impact.

Once adequate graphic material has been procured, and a start made toward obtaining some basic relics, a detailed script for the actual exhibits should be prepared. This should include the text of all

the labels and a brief description of all pictures and relics, on hand or to be procured, in chronological sequence. Then each exhibit section should be laid out to scale. This will be valuable in visualizing the finished project.

A note of admonition in preparing the exhibit. Keep away from the bright garish primary colors. Stick to the soft pastels, varying the color to suit appropriate periods—green for the Mexican War, blue-gray for the Civil War, and the like. The basic color scheme of the exhibit room should be kept soft and inconspicuous so as not to clash with or detract from the exhibits themselves.

The time, work and effort expended on the unit trophy room can be greatly rewarding. The relics and historical properties are invaluable and irreplaceable. Properly preserved and displayed, they can be a wellspring of esprit that constantly renews itself, giving life and continuity to Army units and organizations in peace and war.

THE INDEX to 1958 issues of *Army Information Digest* (Volume 13) has been printed and distributed through channels. Organizations, libraries and individuals desiring the index for file and reference may obtain copies by direct request to The Editor, *Army Information Digest*, Cameron Station, Alexandria, Virginia.

**Where smoke signals once sent
Geronimo's messages,
Army Signal Corps is developing
Space-Atomic Age
communications-electronics
designed to give commanders**

BETTER COMMAND CONTROL

Brigadier General F. W. Moorman

TECHNOLOGICAL developments of the last two decades have provided the Armed Forces of the United States with almost unlimited destructive power in the form of atomic, thermonuclear and other warheads of unconventional design, missile-borne. At the same time, a similar destructive capability has been developed by our most powerful potential enemy.

The art of war, however, is not governed by destructive power alone. When two opponents have



THE location and topography of Fort Huachuca, Arizona, are well suited to the tasks of the United States Army Electronic Proving Ground. Established originally as a Cavalry post to protect settlers from hostile bands of Apache Indians, Fort Huachuca has served in a variety of colorful and important roles during its 82 year history. Its very isolation was a key factor in the selection and re-opening of the Post in February 1954 by the U. S. Army Signal Corps.

Here, remote from large metropolitan areas, it is possible to conduct tests of radiating electromagnetic equipment and systems which are critically needed but which, because of mutual interference, would be nearly intolerable in a more densely populated area.

In addition, the Fort offers many other physical advantages. Occupying 104,000 acres in southwestern Arizona, including an extensive plateau of 5,000 feet elevation and the Huachuca Mountains which rise to an elevation of over 9,000 feet, it presents a combination of mountain ranges and spacious plain areas which provides varied conditions for testing electronic systems and equipment. Recently, the installation has been expanded to provide more adequate engineering and test facilities, and to furnish modern living and recreational accommodations for the 7,000 military and civilian personnel who reside on post.

similar firepower, the advantage will lie with the one who is able to exercise the better command-control of his forces. This factor is at the heart of the mission of the U. S. Army Electronic Proving Ground.

Vigorous and thorough exploitation of technological resources is essential to gain every possible advantage in the acquisition and location of targets and the speed and accuracy with which weapons can be brought to bear upon them. Also, means must be developed for interfering with the enemy's command-control capabilities. Our very existence as a nation, and even our individual lives, may depend upon the effectiveness of the communications-electronic equipment

and systems which the appropriate developing agencies of the Army and their counterparts in the Navy and Air Force can develop.

The United States Army Electronic Proving Ground (USAEPG) at Fort Huachuca, Arizona, was established 14 January 1954 as a Class II activity under the Chief Signal Officer to provide a facility in which concepts and systems of command-control could be devised, tested and evaluated. In essence, the mission of the U. S. Army Electronic Proving Ground is to:

- Develop and propose new command-control systems and concepts of their operation in the Army in the field;
- Develop and recommend related organizations and doctrine;
- Conduct user tests of individual items of equipment and systems of communications-electronics as directed, or as mutually agreed upon by U. S. Continental Army Com-

BRIGADIER GENERAL F. W. MOORMAN is Commanding General, U. S. Army Electronic Proving Ground, Fort Huachuca, Arizona.



Accuracy of one part in ten million is possible with new radio frequency measuring equipment.

mand and the Office of the Chief Signal Officer;

- Conduct engineering tests of communications - electronic equipment and systems as directed;
- Provide meteorological services and equipment required in support of Army research and development activities;
- Train specialized units required to operate communications-electronic equipment and systems; and
- Provide consulting service to the Chief Signal Officer in these fields.

THE USAEPC mission is carried out by nine major operating organizations — Combat Development, Signal Communications, Electronic Warfare, Combat Surveillance, Meteorology, Aviation, and Automatic Data Processing Departments; Range Instrumentation Division, and Combat Surveillance and Target Acquisition Command.

These organizations report to the Deputy Commander and his staff, who supervise the development, execution, review and analysis of the Technical Program. Projects, problems and tasks are assigned to the appropriate departments and in addition the scientific and technical aspects of the USAEPC

Technical Program are coordinated with the Navy, Air Force and other agencies as required.

COMBAT DEVELOPMENT

THE Combat Development Department, organized into three operating divisions, occupies a unique position within the framework of the Proving Ground, making it necessary for its personnel to "wear two hats." On the one hand, the department is charged with the development of signal systems together with the organizations, doctrine and concepts of operation to fit these systems for the army in the field through the period 1970.

On the other hand, it acts as an extension of the technical headquarters staff. This implies that the department insures the proper and coordinated expression of the USAEPC position in matters important to the Army.

In addition, of course, the department performs a myriad of other functions such as evaluation of tests, preparation and proposal of military characteristics for equipments and development and design

of both mechanical and mathematical models as tools to be used in measuring the effectiveness of signal systems.

SIGNAL COMMUNICATIONS

SIGNAL Communications Department is occupied with the time-honored task of the Army Signal Corps—development of communication systems to assure commanders the maximum control of their forces and consequently the greatest possible combat effectiveness. While the task is traditional, the tools of the trade are constantly increasing in number and complexity so that the work of this department is far from routine.

Not so very long ago, the sole purpose of coherent electromagnetic radiation was to communicate simple voice and telegraph signals. Today the spectrum is crowded with emission from a wide range of radar, navigation, and sensory devices; and although the usable high frequency boundary has been extended to a previously unimagined value, maximum effort is required to develop systems and equipment that will minimize or eliminate the waste of channel space.

The Department tests and studies new ideas, concepts, equipment, and systems for transmission of information and seeks solution of problems arising from unique situations. For example, the transmission of a bulk of verbal data by radio may not be as effective or

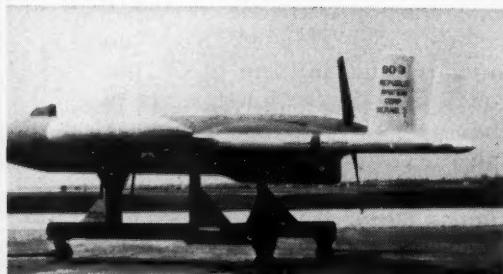
expeditious as having the data itself carried by man, drone, or rocket. Determination and test of the most effective means might be an appropriate task for this Department. Essentially, the approach consists of analyzing the operational need, considering knowledge already available, and postulating or recommending a system to fulfill the need. Such systems and solutions must be available to the man on the battlefield when he needs them.

One particular area of study currently occupying the Department is the mode of transmission of radio signals commonly called "troposcatter." This method of transmission depends upon the fact that a small fraction of the electromagnetic emission radiated from an antenna, and incident upon discontinuities in the lower strata of the earth's atmosphere or troposphere, is returned toward the earth as scattered inflection. The techniques arising from this phenomenon have given rise to transmission systems having the advantages of presently used radio systems without the necessity of intermediate relay stations between terminals.

Operators in a telephone and teletype message center van receive and then relay information with great speed during field tests of division communications.



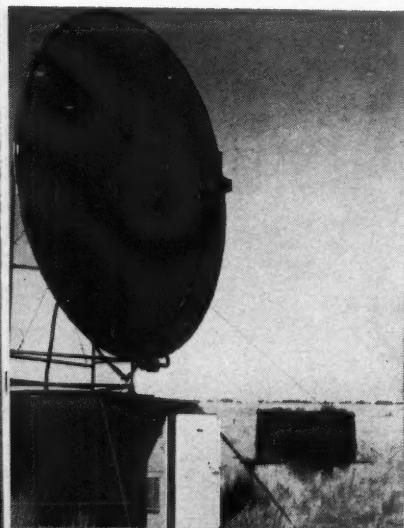
Automatic weather station cabinet provides data useful in development of concepts and techniques.



Drone aircraft, above, greatly enhance combat surveillance capabilities. Below, air transportable units of tropospheric scatter equipment are set up for studies in the field.



Transmissometer now under test transcribes weather data onto tape, above, while aircraft are packed with electronic devices now undergoing test and evaluation, below.



In addition, transmissions carried by tropospheric scattering paths promise to be considerably more reliable than those reflected from the ionosphere or, for that matter, transmitted by any other known mode of propagation.

Man-made satellites and the Pioneer moon rocket have provided potential means for solving some of our problems, but have created some new ones. The first of these is probably the requirement for an intra-space, earth-to-satellite communications system perfected to a point where maximum information transmission is assured.

Man's first venture into space must be accompanied by a near-perfect system of navigation and communication, in which data may be accurately and continuously transmitted and received. Matters of this nature, as well as continuing problems in field combat-communications, are the growing concern of the Signal Communications Department. The approach must be always "open"; old modes of communication must not be shelved as useless; new modes must not be considered as ultimate solutions; and the search for new methods of attacking problems must be unrelenting.

ELECTRONIC WARFARE

THE primary effort of the Electronic Warfare Department (EWD) is directed toward practical application of electronic warfare systems and equipment within the field army. This includes field test and evaluation of proposed systems, concepts, organizations and equipment.

In 1955, certain electronic warfare responsibilities were turned

over to the Army Security Agency. The remaining areas in which EWD has an active interest are countermeasures and counter-countermeasures. Countermeasures are designed to interfere with electromagnetic radiating devices and systems used by the enemy—his radars, navigational aids, and personnel and vehicle locating devices. Counter-countermeasures are devised to reduce the vulnerability of our own electronic equipment.

While security considerations prevent a detailed discussion of equipment and techniques employed in this field, it can be stated that the Department is engaged in a program of testing various items of applicable equipment as they become available. In addition, the Department is evaluating organizations which have been developed to support the electronic warfare concept for a field army.

COMBAT SURVEILLANCE

COMBAT surveillance is a continuous (all-weather, day and night) systematic watch over the battle area to provide timely information for tactical ground operations.

Progress made in electronic and associated technology in the past



Better Command Control

few years has greatly extended combat surveillance capabilities. Handicaps due to weather, darkness, and inaccessible terrain are rapidly being overcome. Electronic equipments designed for various applications have been placed at the disposal of the individual soldier, the squad, the battalion, and other elements of the Army. In each case, these devices serve as vital extensions of normal sensory organs, and become the eyes and ears of the fighting units.

Drone aircraft carrying such devices, for example, greatly enhance combat-surveillance capabilities. Equipped with the KA-20 camera, a completely automatic instrument, the drone can be guided over hostile areas, day or night, under fair weather conditions, recording photographic information without risk to personnel.

A comparatively large number of devices, developed to complement the sensory capabilities of the individual soldier, have been tested by CSD. Among these is the Silent Sentry (AN/PPS-4), a portable, two-man radar device, which can extend the surveillance capability of the foot soldier beyond the boundaries previously imposed by weather and darkness. Detection of enemy movements and location of vital targets are primary functions of this apparatus.

The Sentry is but one segment of a whole family of ground radar developed to serve the needs of Army land forces. Airborne radar equipments and guidance radar for drones are being developed as substantial complements to ground-family radar. Infrared, acoustic, and seismic devices also are being studied and tested, and even these

devices are but a fraction of current and proposed apparatus intended to improve Army competence in combat surveillance.

Allied with CSD is the Combat Surveillance and Target Acquisition Training Command—an activity of U. S. Continental Army Command. This organization equips and trains combat surveillance and target acquisition units for assignment to major combat groups, including missile commands. Instruction in the use, operation, and maintenance of drones, ground and airborne radar systems, infrared equipment and photo-reconnaissance methods is encompassed in the training mission of this command. In addition, classroom instruction and field training are conducted at both the Electronic Proving Ground and at Yuma Test Station nearby.

METEOROLOGY DEPARTMENT

UNLIKE other activities at the Electronic Proving Ground, those of the Meteorology Department are geographically distributed over a considerable section of the globe. Teams working in support of the Army-wide research and development effort are located in Greenland, Panama, Yuma, Puerto Rico, and along the eastern seaboard where they record a variety of weather conditions and problems which contribute materially to the development of concepts, techniques and materiel.

Basically, the function of the Meteorology Department is to provide the U. S. Army with the means for exploiting weather to the greatest possible advantage. Certain duties of any meteorological or weather group are understood

readily—forecasting weather for a few hours or days ahead; determining the effect of weather on personnel, communications, equipment, ground-and-air mobility; and assessing weather effects in atomic warfare. While these responsibilities continue to be significant, the exacting requirements of modern weapons systems have amplified the importance of meteorology in combat operations, particularly with respect to highly localized conditions.

Research capability in the field of small-scale meteorology (micrometeorology) has vastly improved in the last decade, yet many important gaps remain. Meteorology Department has recently been assigned the research and development task in this area.

"Micromet" deals with weather problems over small areas as, for example, the battlefield. Effects of the immediate topography on weather must be studied; the effects of high and low pressure areas adjacent to the battlefield must be known; knowledge of wind directions in the vicinity can assist in reducing fallout hazard from tactical atomic weapons.

Essentially, the aim of micromet

is both offensive and defensive—using weather knowledge to increase the battle advantage, and to decrease losses which may be due to weather effects. The basic research effort takes the form of assistance from universities and private research institutions, controlled experimental processes, and tests of equipment and procedures in the field.

Currently under test is an instrument called the transmissometer, a completely automatic weather observer which transcribes onto teletype tape a record of wind velocity and direction, temperature, humidity, dewpoint, atmospheric pressure, rainfall, and visibility—all coded for storage and ready for transmission.

AVIATION DEPARTMENT

PRIMARY mission of this Department is to provide the Army with adequate, accurate and reliable avionic (aviation-electronic) systems and equipment. In this connection, it performs engineering tests and evaluations of avionics equipments and systems and determines capabilities, limitations, adequacy, and compatibility. By

Silent Sentry extends surveillance capability of foot soldier beyond bounds of weather or darkness.



Better Command Control

maintaining liaison with appropriate governmental, commercial, educational and professional agencies, the Department keeps abreast of progress in the entire field of aviation electronics. Still another important function is to select and recommend avionics equipment and systems for interim use until long-term development items are available.

In addition to pursuing its technical program, the Aviation Department provides aviation support for other departments of the Electronic Proving Ground. Virtually every assigned aircraft contains one or more electronic devices or systems which are undergoing test and evaluation.

These functions illustrate the dual role of the Signal Corps as supplier of electronics for Army aviation and as user of Army aircraft to support communications in the field army. Advances in aviation may extend the potential tactical uses of electronic equipment, while developments in electronic guidance and control systems directly affect the capability and versatility of Army aircraft. In every aspect, the efforts of the Aviation Department are directed toward insuring timely availability of the most advanced electronic systems and techniques for Army aviation.

AUTOMATIC DATA PROCESSING

AS its name implies, the Automatic Data Processing Department (ADPD) has the broad mission of developing automatic data processing systems and equipment for application to the Army's fields of interest. A relatively new organization, it is charged with the development, test, and evaluation of

systems for the processing of all types of data and written information within the field army.

To an organization as widely deployed as the Army, the application of the powerful tools and techniques of this new science is practically a necessity. Its recognized savings in time, money, and effort are manifold in the areas of record-keeping, personnel-selection, payroll applications and in rapid solution of mathematical and engineering problems—fields in which the Army has a vital interest.

AT the Electronic Proving Ground, primary interest in Automatic Data Processing centers in its tactical application, rather than the clerical. With the feasibility of applying computer techniques in a tactical warfare environment already established, a high priority program is under way to place a prototype Automatic Data Processing System into the Army's tactical organization within four years.

The Proving Ground is essentially concerned with design objectives, progress in application of the system, hardware development and exploitation of known computer techniques. It is anticipated that this system, organizationally, will consist of a large complex of data processing centers and supporting data transmission links, which in concert will provide an unprecedented display of information capability for the processing and

Acquisition for test purposes of an entire field army complement of an Automatic Data Processing System in prototype form is to be completed by 1963, and will incorporate the very latest developments in computer techniques.

As an additional task, ADPD serves all departments in recording, reducing, processing, and analyzing scientific data.

RANGE INSTRUMENTATION

WHILE this Division is still in an embryonic stage of development, high hopes are held for its future contributions. The most obvious role is implied by its name—to provide a fully instrumented range for determining technical characteristics and operational capabilities of Army communications-electronic equipment and systems. In line with this mission, plans are underway to establish extensive test range facilities at USAEPG to include: radar coverage, electromagnetic monitoring and frequency control, range safety instrumentation calibration and maintenance of standard and calibrating equipment.

THE second mission of the Division is to produce, through simulation techniques, an electromagnetic environment similar to that expected in a future combat area. Anyone who has experienced interference with his radio or television reception will appreciate the importance of establishing the compatibility of radio, radar, navigation, and guidance systems operating in the concentrations and close proximities dictated by the requirements of modern military operations. Moreover, it takes no particularly vivid imagination to envisage the disaster which might accompany attempted use of incompatible electronic guidance, homing, fuse, and communication systems in the same area.

Concurrently under development is a comprehensive Electronic Environmental Test Facility capable of simulating any electronic environment which might be encountered on a modern battlefield together with instrumentation, recording and display equipment.

Working through its various departments, the U. S. Army Electronic Proving Ground seeks to furnish commanders in the field with a complex of compatible communications-electronic systems which will insure optimum command-control of their forces. The Signal Corps recognizes its grave responsibility to contribute to the development of systems for surveillance and target acquisition, countermeasures, the transmission and handling of data, and other related areas in which electronic and associated apparatus can be employed to direct and regulate the enormous fire power now available to our Army. It is vitally concerned with getting usable modern tools into the hands of all elements of our combat forces before these tools approach obsolescence, and it is using, to the fullest extent possible, existing technology and equipment.

HERE at USAEPG, our primary interest is in longer term development. We must anticipate the requirements, structure, and capabilities of the future armies and incorporate in our thinking the latest developments of science and technology. Only by this method can we ensure that the U. S. Army will maintain a high state of readiness consistent with the tools available. We will continue to pursue this task with dedication and determination.

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NEWS of professional interest

USAREUR Command Changes

General Clyde D. Eddleman, Commanding General of U. S. Seventh Army, has succeeded General Henry I. Hodes as Commander in Chief, U. S. Army, Europe. General Hodes retired 31 March.

General Eddleman also will be Commanding General of the NATO Central Army Group. Lieutenant General Francis W. Farrell, Commanding General of V Corps, Frankfurt, Germany, will succeed General Eddleman as Commanding General of U. S. Seventh Army.

New 8 x 8 Truck

In line with Army efforts to secure better air-transportability and increased fuel mileage, first of a new family of Army trucks, the XM410, has been successfully developed by Chrysler Corporation. It will be an "intermediate duty" truck, with approximately 30 percent greater payload-to-vehicle-weight ratio, 50 percent better fuel mileage, and weighing about 5,000 pounds less than the current 13,000-pound 2½-ton truck.

The new vehicle has an aluminum, integral-body-frame, and will float when empty or loaded. It will be powered by an eight cylinder, 165-horsepower engine which eventually will be able to use gasoline, kerosene or diesel fuel. Major components of the 8x8—*i.e.*, eight wheels with power transmitted through all wheels—will be interchangeable with the proposed 4x4 one-ton and 1½-ton members of the intermediate family. Independent suspension on all wheels will provide greater mobility.

Army Ordnance Corps will conduct tests on the new trucks at Aberdeen Proving Ground, Maryland.

Solar Powered Signals

After more than one year, radio messages still are returning to earth from the Vanguard I satellite which was launched 17 March 1958—and from all indications the signals may possibly continue indefinitely. The steady signals being picked up daily are the source of valuable data on altitude, orbit rate and temperature.

The cells or solar converters in the device were built by Hoffman Electronics, Los Angeles. Success of the signals from the Navy-launched satellite is largely due to the solar power sources designed by the Army Signal Research and Development Laboratory and to Bell Telephone Laboratories which invented the cells and the transistors they operate. (*Note:* In the April 1959 DIGEST (line 11, inside back cover), credit for invention of the transistor should have been given to Bell Telephone Laboratories — the organization which invented and developed the transistor.)

Missile Support for NATO

The 46th Artillery Group (Redstone) located at Fort Sill, Oklahoma, is moving to Germany to provide additional tactical missile fire support for NATO forces. The unit will be the second of its type stationed outside continental United States.

Transportation Detachment

Reflecting the increased importance of military shipping anticipated with projected opening of the St. Lawrence Seaway this spring, a U. S. Army Transportation Terminal Detachment has been established at Toledo, Ohio, to handle Army-controlled shipments moving through Great Lakes-St. Lawrence Seaway ports. The detachment is a sub-activity of the

Transportation Terminal Command, Atlantic, at Brooklyn. It will supervise commercial terminal operations contracted for by the Army.

M-60 Tank On the Way

Assembling of the new main battle tank, the M-60, will get underway by mid-1960 at the Army Ordnance, Newark, Delaware, plant, under present plans that call for initial production of 180 units by Chrysler Corporation. The new tank will replace both the present medium 53-ton (M-48) and heavy 60-ton (M-103). Its new British-made 105mm gun is capable of defeating any armored vehicle known to exist today. The M-41 light tank will continue to be used for reconnaissance and security missions.

With heavier armament and a diesel engine that will increase operational range, the 52-ton M-60 also will provide a simplified fire control system. A crew of four will operate it. The engine is rated at 750 horsepower, to provide a speed of 32 mph, with range of 250 miles.

Chemical Corps Graduate Training

A recent survey shows that over one-third of the Regular Army officers in the U. S. Army Chemical Corps hold graduate degrees. More than two-thirds of these degrees were obtained by officers attending universities while on active duty under AR 350-200 and AR 350-46.

Winter Biathlon Competition

The United States Modern Winter Biathlon Team placed fifth in the 1959 World Championships held in Courmayeur, Italy, in February. The Biathlon will replace the Military Ski Patrol Team Race beginning with the 1960 Olympic Games held in Squaw Valley, California, 18-28 February 1960.

The Individual Modern Winter Biathlon Championships consist of cross country skiing over a course of approximately 20 kilometers, and rifle shooting at four different targets. At three of these targets the competitor may choose his firing position, but the standing position is mandatory at the fourth. Shooting is accomplished while negotiating the cross-country ski course. Training site for the team is Fort Richardson, Alaska.

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WITH CEASELESS REGULARITY, like a pendulum marking the passing seconds into eternity, the sentry paces to and fro before the remains of three comrades in arms at the Tombs of the Unknowns in Arlington National Cemetery.

This scene, the focal symbol of the remembrance that a Nation pays to its honored dead each Memorial Day, has become familiar to thousands of visitors to the Cemetery, since the Unknown Soldier of World War I was interred there.

Just a year ago, on Memorial Day 1958, with impressive public ceremonies, the remains of unknown servicemen of World War II and Korea were placed to rest in crypts that flank the starkly beautiful mausoleum of the Unknown Soldier of World War I.

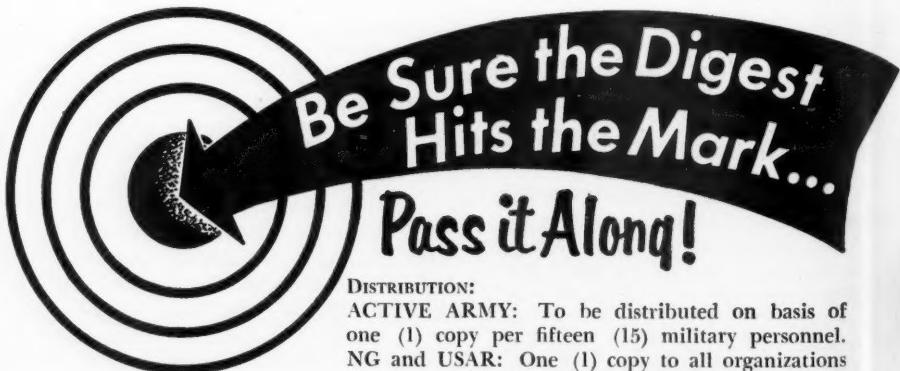
Today a continual stream of visitors, from heads of state to common citizens, come daily to pay reverent tribute to the Unknowns. Men assigned to the Tomb Guard are members of the historic 3d Infantry Regiment, Fort Myer, Virginia. For the Nation at large, this scene of the pacing sentry at the Tombs of the Unknown Servicemen is the symbolic incarnation of the everlasting tribute accorded America's honored war dead.

Army Engineer Research Reports Available to Public

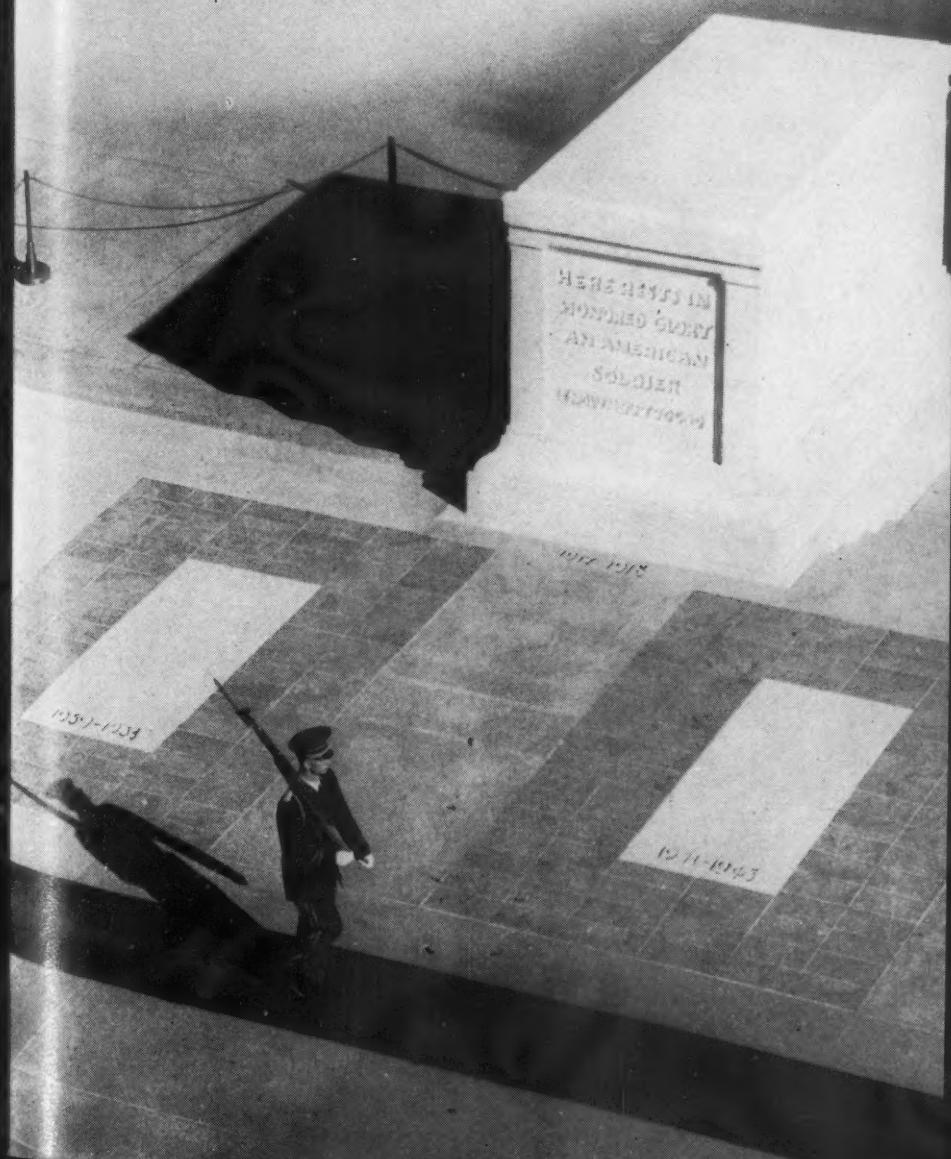
BECAUSE so many of its developments and studies are of general interest, reports by the U. S. Army Corps of Engineers Research and Development Laboratories are being made available to the public. According to the Technical Documents Center of the Laboratories at Fort Belvoir, Virginia, between 500 to 600 reports have been released since World War II, and another 200 could be classed as being of general interest. They cover a variety of projects ranging from "Fire Retardant Paint and Paint Systems" to "Proceedings of the Conference on Infrared Optical Materials.

Reports from Army Engineers go to

the Office of Technical Services for distribution, where the more important are reprinted for sale to the public. Originals of others are deposited at the Library of Congress where they may be inspected; photocopies and microfilms may also be ordered from the Library. Reports of special interest to small business are abstracted in the monthly OTS Technical Reports Newsletter, available from the Superintendent of Documents, Washington 25, D. C., at \$1.00 a year domestic, or \$1.50 foreign. Abstracts of reports also are published in "U. S. Government Research Reports" issued monthly by the Superintendent of Documents.



MEMORIAL DAY, 1959



MARK OF A MAN



